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| APPLICATION NO. | ISSUE DATE | PATENT NO. | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/13/2014 | RE44884 | 3007.P0418US | 6260 |

7590 04/23/2014

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

# ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

## Determination of Patent Term Extension or Adjustment under 35 U.S.C. 154 (b)

A reissue patent is for "the unexpired part of the term of the original patent." See 35 U.S.C. 251. Accordingly, the above-identified reissue application is not eligible for Patent Term Extension or Adjustment under 35 U.S.C. 154(b).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Clifford E. Lambarth, Portage, MI;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

# PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail** **Mail Stop ISSUE FEE**
**Commissioner for Patents**
**P.O. Box 1450**
**Alexandria, Virginia 22313-1450**
**or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590 02/27/2014
FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

**Certificate of Mailing or Transmission**
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

| |
|---|
| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

TITLE OF INVENTION: AMBULANCE COT WITH PINCH SAFETY FEATURE

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $960 | $0 | $0 | $960 | 05/27/2014 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| TRETTEL, MICHAEL | 3673 | 005-611000 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 FLYNN, THIEL, BOUTELL
2 & TANIS, P.C.
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Stryker Corporation
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Kalamazoo, Michigan

Reel/Frame: 020694/0779

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
☒ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
☐ A check is enclosed.
☒ Payment by credit card. ~~Form PTO-2038 is attached.~~
☒ The Director is hereby authorized to charge ~~the required fee(s),~~ any deficiency, or credits any overpayment, to Deposit Account Number 06-1382 ~~(enclose an extra copy of this form).~~

5. **Change in Entity Status** (from status indicated above)
☐ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
☐ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
☐ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date March 12, 2014
Typed or printed name Terryence F. Chapman Registration No. 32 549

# Electronic Patent Application Fee Transmittal

| | |
|---|---|
| **Application Number:** | 13068358 |
| **Filing Date:** | 09-May-2011 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Attorney Docket Number:** | 3007.P0418US |

Filed as Large Entity

## Utility under 35 USC 111(a) Filing Fees

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Basic Filing:** | | | | |
| **Pages:** | | | | |
| **Claims:** | | | | |
| **Miscellaneous-Filing:** | | | | |
| **Petition:** | | | | |
| **Patent-Appeals-and-Interference:** | | | | |
| **Post-Allowance-and-Post-Issuance:** | | | | |
| Reissue issue fee | 1511 | 1 | 960 | 960 |
| **Extension-of-Time:** | | | | |

| Description | Fee Code | Quantity | Amount | Sub-Total in USD($) |
|---|---|---|---|---|
| **Miscellaneous:** | | | | |
| | | | **Total in USD ($)** | **960** |

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 18444597 |
| **Application Number:** | 13068358 |
| **International Application Number:** | |
| **Confirmation Number:** | 6260 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Correspondence Address:** | FLYNN, THIEL, BOUTELL & TANIS, P.C.<br>-<br>2026 RAMBLING ROAD<br>-<br>KALAMAZOO MI 49008-1631<br>US 2693811156<br>- |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Filer Authorized By:** | David G. Boutell |
| **Attorney Docket Number:** | 3007.P0418US |
| **Receipt Date:** | 12-MAR-2014 |
| **Filing Date:** | 09-MAY-2011 |
| **Time Stamp:** | 14:30:34 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | yes |
| Payment Type | Credit Card |
| Payment was successfully received in RAM | $960 |

| | |
|---|---|
| RAM confirmation Number | 893 |
| Deposit Account | |
| Authorized User | |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | Issue Fee Payment (PTO-85B) | 3007P0418USIssueFeeTransmittal03122014.pdf | 155247<br>fcdd380373b15401fb8146f4d1391d525e2382a5 | no | 1 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Fee Worksheet (SB06) | fee-info.pdf | 30683<br>0bdad271df830feac06f101dc6c91530eb05aab6 | no | 2 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 185930 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**
**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**
**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**
**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

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www.uspto.gov

# NOTICE OF ALLOWANCE AND FEE(S) DUE

7590 02/27/2014

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER |
|---|
| TRETTEL, MICHAEL |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

DATE MAILED: 02/27/2014

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

TITLE OF INVENTION: AMBULANCE COT WITH PINCH SAFETY FEATURE

| APPLN. TYPE | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $960 | $0 | $0 | $960 | 05/27/2014 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

**HOW TO REPLY TO THIS NOTICE:**

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# PART B - FEE(S) TRANSMITTAL

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**Commissioner for Patents**
**P.O. Box 1450**
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**or Fax (571)-273-2885**

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CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

7590 02/27/2014

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

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**Certificate of Mailing or Transmission**

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| |
|---|
| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

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|---|---|---|---|---|---|---|
| nonprovisional | UNDISCOUNTED | $960 | $0 | $0 | $960 | 05/27/2014 |

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|---|---|---|
| TRETTEL, MICHAEL | 3673 | 005-611000 |

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**

❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ Applicant certifying micro entity status. See 37 CFR 1.29

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

❑ Applicant asserting small entity status. See 37 CFR 1.27

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

❑ Applicant changing to regular undiscounted fee status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____





PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 02/27/2014

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

DATE MAILED: 02/27/2014

## Determination of Patent Term Extension or Adjustment under 35 U.S.C. 154 (b)

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Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

## OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

## Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

| Notice of Allowability | Application No. 13/068,358 | Applicant(s) LAMBARTH, CLIFFORD E. | |
|---|---|---|---|
| | Examiner Michael Trettel | Art Unit 3673 | AIA (First Inventor to File) Status No |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *interview of January 16, 2014*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *1-6*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   **Certified copies:**

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**.

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   **Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/Michael Trettel/
Primary Examiner, Art Unit 3673

***Reasons For Allowance***

The following is an examiner's statement of reasons for allowance: with respect to the changes made to claims 1, 3, and 5 the examiner is of the opinion that these changes only correct errors present in the claims that have made them unsupported by the specification. These changes have been made to the limitations added to original claims 1, 4, and 7 of U.S. Application No. 12/002,958 (now U.S. Patent No. 7,540,047) in order to secure an allowance, but they do not broaden the claims in a way that leads to recapture of subject matter surrendered in the parent application. These changes correct the subject matter of the claims in how they are correspond to and are supported by the specification. They also further narrow the added limitations since they further describe and limit the location of the crosswise member and how it relates to the litter frame and first mount of claim 1, and how it relates to the position of the first mount in claim 5. The changes made to claim 3 only correct how the claim is supported by the specification as described in column 19, lines 39-44 of U.S. Patent No. 7,540,047.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Trettel whose telephone number is (571)272-7052. The examiner can normally be reached on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pete Cuomo can be reached on (571) 272-6856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Trettel
Primary Examiner
Art Unit 3673

/Michael Trettel/
Primary Examiner, Art Unit 3673

| **Examiner-Initiated Interview Summary** | **Application No.** 13/068,358 | **Applicant(s)** LAMBARTH, CLIFFORD E. | |
|---|---|---|---|
| | **Examiner** Michael Trettel | **Art Unit** 3673 | |

All participants (applicant, applicant's representative, PTO personnel):

(1) *Michael Trettel*. (3)_____.

(2) *Dave Boutell*. (4)_____.

Date of Interview: *03 February 2014*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☐ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1 and 3*.

Identification of prior art discussed: _____.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

*The examiner proposed the following changes to claims 1 and 3: in claim 1, line 21 "of said litter frame" has to be underlined since this is a change to the claim as issued. This corrects a formatting error.*

*In claim 3 it appears that in lines 14 and 15 should change "base" to litter (underlined) since the declaration of 12//23/2013 stated that the patent claims 3 defect was meant to correct a recitation of when the mount engages the litter frame (first paragraph of page 4 of the declaration). This makes the claim agree with what the declaration says.*

*Mr. Boutell agreed with the change to claim 1, but not to that of claim 3. Instead he will file another supplemental declaration supporting the present wording of claim 3 and as to how the changes correct errors present in the claim. A amendment will be filed correcting claim 1 and providing a declaration supporting claim 3 as presently worded*.

**Applicant recordation instructions**: It is not necessary for applicant to provide a separate record of the substance of interview.

**Examiner recordation instructions**: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

| /Michael Trettel/<br>Primary Examiner, Art Unit 3673 | |
|---|---|

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | Examiner | Art Unit |
| | MICHAEL TRETTEL | 3673 |

| CPC- SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| CPC COMBINATION SETS - SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| US CLASSIFICATION SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 5 | 11, 611, 118, 86.1 | 2/17/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 2/17/2012 | MT |
| 254 | 2R, 8R, 9R | 2/17/2012 | MT |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| Search updated. | 6/29/2012 | MT |
| Search updated. | 10/4/2012 | MT |
| Search updated. | 11/4/2013 | MT |
| Search updated. | 1/28/2014 | MT |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| US Class/ CPC Symbol | US Subclass / CPC Group | Date | Examiner |
| 5 | 11, 611, 118, 86.1 | 1/28/2014 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 1/28/2014 | MT |
| 254 | 2R, 8R, 9R | 1/28/2014 | MT |

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| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

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|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 02/17/2012 | 06/29/2012 | 10/04/2012 | 11/04/2013 | 01/28/2014 | | | | |
| 1 | 1 | ✓ | ✓ | ✓ | ✓ | = | | | | |
| 2 | 2 | ✓ | ✓ | ✓ | ✓ | = | | | | |
| 3 | 3 | ✓ | ✓ | ✓ | ✓ | = | | | | |
| 4 | 4 | ✓ | ✓ | ✓ | ✓ | = | | | | |
| 5 | 5 | ✓ | ✓ | ✓ | ✓ | = | | | | |
| 6 | 6 | ✓ | ✓ | ✓ | ✓ | = | | | | |
| | 7 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 8 | ✓ | - | - | - | - | | | | |
| | 9 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 10 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 11 | ✓ | - | - | - | - | | | | |
| | 12 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 13 | ✓ | ✓ | ✓ | ✓ | - | | | | |
| | 14 | ✓ | - | - | - | - | | | | |
| | 15 | ✓ | ✓ | ✓ | ✓ | - | | | | |

## EAST Search History

### EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L16 | 846 | (5/611,296/20).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L17 | 465 | (254/2R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L18 | 372 | (254/8R,9R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L19 | 1304 | (5/11,86.1).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L20 | 321 | (108/145,147.2,147.22).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L21 | 1025 | (108/144.11,147).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L22 | 488 | (5/118).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |
| L23 | 4504 | L16 or L17 or L18 or L19 or L20 or L21 or L22 | US-PGPUB; USPAT; EPO | OR | OFF | 2014/01/28 10:24 |

### EAST Search History (Interference)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L9 | 1 | (5/611,296/20).CCLS. | UPAD | OR | OFF | 2014/01/28 10:24 |
| L10 | 0 | (254/2R).CCLS. | UPAD | OR | OFF | 2014/01/28 10:24 |
| L11 | 1 | (5/11,86.1).CCLS. | UPAD | OR | OFF | 2014/01/28 10:24 |
| L12 | 1 | (108/145,147.2,147.22).CCLS. | UPAD | OR | OFF | 2014/01/28 10:24 |
| L13 | 1 | (108/144.11,147).CCLS. | UPAD | OR | OFF | 2014/01/28 10:24 |
| L14 | 1 | (5/118).CCLS. | UPAD | OR | OFF | 2014/01/28 10:24 |
| L15 | 5 | L9 or L10 or L11 or L12 or L13 or L14 | USPAT; UPAD | OR | OFF | 2014/01/28 10:24 |

**1/28/2014 10:28:56 AM**
**C:\Users\mtrettel\Documents\EAST\Workspaces\13068358.wsp**

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

| CPC | | |
|---|---|---|
| **Symbol** | **Type** | **Version** |
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| CPC Combination Sets | | | | |
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| **Symbol** | **Type** | **Set** | **Ranking** | **Version** |
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|---|---|---|
| NONE<br><br>(Assistant Examiner) (Date) | **Total Claims Allowed:**<br>6 | |
| /MICHAEL TRETTEL/<br>Primary Examiner.Art Unit 3673<br><br>(Primary Examiner) (Date) | O.G. Print Claim(s)<br>1 | O.G. Print Figure<br>2,5 |

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

| US ORIGINAL CLASSIFICATION | |
|---|---|
| **CLASS** | **SUBCLASS** |
| 5 | 611 |

| CROSS REFERENCE(S) | | | | | |
|---|---|---|---|---|---|
| **CLASS** | **SUBCLASS (ONE SUBCLASS PER BLOCK)** | | | | |
| 5 | 86.1 | | | | |
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| INTERNATIONAL CLASSIFICATION | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CLAIMED** | | | | | | **NON-CLAIMED** | | | | | | | | |
| A | 6 | 1 | G | 1 / 02 (2006.01.01) | | | | | | | | | | |
| A | 6 | 1 | G | 15 / 06 (2006.01.01) | | | | | | | | | | |
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| NONE<br><br>(Assistant Examiner) (Date) | **Total Claims Allowed:**<br>6 | |
| /MICHAEL TRETTEL/<br>Primary Examiner.Art Unit 3673<br><br>(Primary Examiner) (Date) | O.G. Print Claim(s)<br>1 | O.G. Print Figure<br>2,5 |

| Issue Classification | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
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| 1 | 1 | | | | | | | | | | | | | | |
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| 3 | 3 | | | | | | | | | | | | | | |
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| 5 | 5 | | | | | | | | | | | | | | |
| 6 | 6 | | | | | | | | | | | | | | |
| - | 7 | | | | | | | | | | | | | | |
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|---|---|---|
| NONE<br><br>(Assistant Examiner) (Date) | **Total Claims Allowed:**<br>6 | |
| /MICHAEL TRETTEL/<br>Primary Examiner.Art Unit 3673<br><br>(Primary Examiner) (Date) | O.G. Print Claim(s)<br>1 | O.G. Print Figure<br>2,5 |

| Application Number | Application No. | Applicant(s) |
|---|---|---|
| | 13/068,358 | LAMBARTH |
| | Notice of Reissue Published in OG on 6/21/11 | |

Original Patent Number of Patent To Be Reissued is

7,540,047

The Maintenance fee status is:

- [x] up to date.
- [ ] not required.

This reissue patent is subject to A Terminal Disclaimer that: N/A

- [ ] was filed during the prosecution of the reissue application.
- [ ] was of record prior to the filing of the reissue application.

Physical surrender of the letters patent

- [ ] was made.
- [ ] was not made, but a statement of loss/inaccessibility was provided.
- [x] is not required

**Final SPRE Review**

SM
(INITIALS)

2/22/14
(DATE)

U.S. Patent and Trademark Office

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

February 5, 2014

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

AMENDMENT TO FINAL REJECTION

Sir:

Supplemental to the response to the Office Action filed on December 23, 2013, please amend the above-identified application as follows:

(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame; and

wherein said litter [base] frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame, said first mount [and] being oriented in a path of movement of said [first mount] first crosswise member as said litter frame becomes proximate said base frame so that said [first mount] first crosswise member engages and rests upon said [at least one first crosswise member] first mount, and wherein said base [litter]

frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base [litter] frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. (Previously Presented) The ambulance cot according to claim 1, wherein said first and second mounts each engage [and rest upon] respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter [base] frame, said first mount being configured to [respectively] engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

4. (Previously Presented) The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said base frame.

5. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base [litter] frame, said first mount being configured to [respectively] engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails, said first mount [and] being oriented in a path of movement of said [first mount] at least one crosswise member as said litter frame becomes proximate said base frame so that said [first mount] at least one crosswise member engages and rests upon said [at least one crosswise member] first mount.

6. (Previously Presented) The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said litter frame.

7. Canceled.

8. Canceled.

9. Canceled.

10. Canceled.

11. Canceled.

12. Canceled.

13. Canceled.

14. Canceled.

15. Canceled.

## REMARKS

Status of Patent Claims:

Patent Claim 1 has been amended to correct a formatting error in line 3 of the last paragraph. Claims 2-6 remain as "Previously Presented". The Reissue Claims 7-15 are canceled. Reconsideration of the above set forth Patent Claims 1-6 is respectfully solicited.

Fifth Supplemental Reissue Application Declaration by Inventor:

The enclosed Fifth Supplemental Declaration sets forth a more clear explanation of the basis for the amendments previously made to Patent Claims 3 and 5.

Reconsideration of the enclosed Fifth Supplemental Reissue Application Declaration by Inventor is respectfully solicited.

Further and favorable consideration of this reply is respectfully solicited.

Respectfully submitted,

/David G. Boutell/

DGB/kc

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Kalamazoo, MI 49008-1631
Phone: (269) 381-1156
Fax: (269) 381-5465

Terryence F. Chapman Reg. No. 32 549
Liane L. Churney Reg. No. 40 694
Eugene J. Rath III Reg. No. 42 094
Marcus P. Dolce Reg. No. 46 073
David G. Boutell Reg. No. 25 072
Sidney B. Williams, Jr. Reg. No. 24 949

Encl: FIFTH SUPPLEMENTAL REISSUE APPLICATION DECLARATION BY INVENTOR

136.10/11

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FIFTH SUPPLEMENTAL REISSUE APPLICATION
DECLARATION BY INVENTOR

I hereby declare that: My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 7 540 047 granted on June 2, 2009, and for which a reissue patent is sought on the invention entitled AMBULANCE COT WITH PINCH SAFETY FEATURE, the application of which was filed on May 9, 2011 as reissue application no. 13/068,358 and is being amended concurrently herewith. I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims as amended by amendments filed on June 6, 2012, September 6, 2012 and January 17, 2013, and the amendment filed concurrently herewith and referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37 CFR 1.56.

I do not claim foreign priority benefits under Title 35 USC 119 of any foreign application(s) for patent or inventor's certificate.

I verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of other errors.

Specifically, Patent Claims 1, 3 and 5 are defective because they are not supported by the specification. More specifically, the specification describes an ambulance cot 10 comprising a base frame 11, a litter frame 17 and an X-frame support mechanism 18 including at least pair of frame members 19 and 21 pivotally secured to each other proximate the mid-length portions by an axle 24. The frame members 19 and 21 each have opposite ends secured respectively to one of the base frame 11 and the litter frame 17 (Col. 4, lines 8-54). A first mount 226 is oriented between the mid-length of the frame members and the base frame 11. The first mount 226 is configured to move into and out of engagement with the litter frame 17. A second mount 227 is oriented between the mid-length of the frame members and the litter frame 17. The second mount 227 is configured to move into and out of engagement with the base frame 11. The base frame 11 has side rails 12 and at least one crosswise member 13 interconnecting the side rails 12. The litter frame 11 has side rails 66 and at least one crosswise member interconnecting the side rails 66 (Col. 19, lines 38-44).

Patent Claim 1 Defect:

The defect in Patent Claim 1 is that it is recited that at least one of the pair of frame members 19 and 21 have a "first mount" 226 oriented between the mid-length thereof and the base

frame 11 and that at least one of the frame members 19 and 21 have a "second mount" 227 oriented between the mid-length thereof and the litter frame 17. Toward the end of the third paragraph of Patent Claim 1 it is recited that the first mount 226 and the second mount 227 are configured to "respectively engage" the base frame 11 and the litter frame 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 226 being configured to engage the base frame 11 nor does it provide support for the second mount 227 being configured to engage the litter frame 17.

The amendment to Patent Claim 1 is intended to remedy the defect by reciting in Reissue Claim 1 that the first and second mounts are configured to "respectively engage" the "litter frame" 17 and the "base frame" 11.

Patent Claim 3 Defect:

Patent Claim 3 recites that the "first mount" 226 is oriented between the mid-length of the frame members 19 and 21 and the base frame 11. The defect in Patent Claim 3 occurs toward the end of the third paragraph of Patent Claim 3 wherein it is recited that the first mount 226 is configured to "respectively engage" the "base frame" 11 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 226 being configured to engage the base frame 11. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 3 is intended to remedy the defect in Patent Claim 3 by reciting that the first mount (227) is located between the mid-length of the frame members 19 and 21 and the "litter frame" and is configured to "engage" the "base frame" 11.

Patent Claim 5 Defect:

Patent Claim 5 recites that the "first mount" (here it is mount 227) is oriented between the mid-length of the frame members 19 and 21 and the litter frame 17. The defect in Patent Claim 5 occurs toward the end of the third paragraph of Claim 5 wherein it is recited that the first mount 227 is configured to "respectively engage" the "litter frame" 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 227 being configured to engage the litter frame 17. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 5 is intended to remedy the defect in Patent Claim 5 by reciting that the first mount (226) is located between the mid-length of the frame members 19 and 21 and the "base frame" and is configured to "engage" the "litter frame" 11.

Every error in the patent which was corrected in the present reissue application, and is not covered by the prior declaration submitted in this application, arose without any deceptive intention on the part of the applicant.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or

imprisonment, or both, under Section 1001 of Title 18 of theUnited States Code, and that such willful false statements may
jeopardize the validity of the application or any patent issued thereon, or any patent to which this declaration is directed.

Sole
Inventor's
Signature Clifford E Lambarth Date 2/4/2014

Full name of sole inventor: Clifford E. Lambarth
Residence: Portage, Michigan
Citizenship: United States
Post Office Address: 10801 Cora Drive, Portage, MI 49002

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 18119670 |
| **Application Number:** | 13068358 |
| **International Application Number:** | |
| **Confirmation Number:** | 6260 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Correspondence Address:** | FLYNN, THIEL, BOUTELL & TANIS, P.C.<br>-<br>2026 RAMBLING ROAD<br>-<br>KALAMAZOO MI 49008-1631<br>US 2693811156<br>- |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Filer Authorized By:** | David G. Boutell |
| **Attorney Docket Number:** | 3007.P0418US |
| **Receipt Date:** | 05-FEB-2014 |
| **Filing Date:** | 09-MAY-2011 |
| **Time Stamp:** | 13:58:19 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 3007P0418USAmendmentAfterFinalRejection02052014.pdf | 411209<br>86d26a518d3f62090560fe97459ad0de832f448c | yes | 6 |

| | Multipart Description/PDF files in .zip description | | |
|---|---|---|---|
| | Document Description | Start | End |
| | Response After Final Action | 1 | 1 |
| | Claims | 2 | 5 |
| | Applicant Arguments/Remarks Made in an Amendment | 6 | 6 |

| | | | | | |
|---|---|---|---|---|---|
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| 2 | Supp reissue dec filed in accord with MPEP 1414.01. | 3007P0418US5thInventorsDeclaration02052014.pdf | 395615<br>fc2cf7e5b12a28dec5717d72a1860c4c48646a23 | no | 5 |
| **Warnings:** | | | | | |
| **Information:** | | | | | |
| | | **Total Files Size (in bytes):** | 806824 | | |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

Scientific and Technical Information Center

# EIC 3700 SEARCH REPORT

## STIC Database Tracking Number: 383799

| To: | From: |
|---|---|
| MICHAEL TRETTEL<br>Location: KNX-2A05<br>Art Unit: 3673<br>Monday, January 30, 2012<br><br>Case Serial Number: 13/068358 | TERRENCE SOLOMON<br>Location: EIC3700<br>RND-8B31<br>Phone: (571)272-3509<br><br>terrence.solomon@uspto.gov |

## Search Notes

US Pat. 7540047 was not involved in any federal court cases or other legal proceedings.

Sources:

- Lexis (0)
- Courtlink (0)
- Lit Alert (0)

EXHIBIT 1004 PAGE0036

*002958 (12) 7540047 June 2, 2009*

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

**7540047**

Get Drawing Sheet 1 of 61
Access PDF of Official Patent *
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Link to Claims Section

June 2, 2009

Ambulance cot with pinch safety feature

**APPL-NO:** 002958 (12)

**FILED-DATE:** December 19, 2007

**GRANTED-DATE:** June 2, 2009

**LEGAL-REP:** Flynn, Thiel, Boutell & Tanis, P.C.

**PRIM-EXMR:** Trettel, Michael

**CORE TERMS:** cot, ambulance, valve, bracket, load, rail, litter, housing, hydraulic, switch, handle, fluid, pin, leg, rod, bit, button, diagnostic, wireless, arm, handheld, fastener, latch, actuator, linear, axle, side rails, transducer, attendant, cylinder

Source: **Legal > / . . . / > Utility, Design and Plant Patents**
Terms: **patno=7540047** (Suggest Terms for My Search)
View: Custom
Segments: Asst-exmr, Cert-correction, Exmr, Legal-rep, Legal-status, Lit-reex, Prim-exmr, Reexam-litigate, Reissue, Reissue-comment
Date/Time: Monday, January 30, 2012 - 2:59 PM EST

In

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FERNO-IPR2021-00042
EXHIBIT 1004 PAGE0036

EXHIBIT 1004 PAGE0037

# Patent Search 7,540,047 1/30/2012

No cases found.


FERNO IPR2021-00942
EXHIBIT 1004 PAGE0037

File 670:LitAlert 1973-2012/UD=201203
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| Set | Items | Description |
|---|---|---|

**? s pn=us 7540047**

| | | |
|---|---|---|
| S1 | 0 | PN=US 7540047 |

UNITED STATES PATENT AND TRADEMARK OFFICE

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 01/30/2014

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 01/30/2014 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| **Examiner-Initiated Interview Summary** | **Application No.** 13/068,358 | **Applicant(s)** LAMBARTH, CLIFFORD E. | |
|---|---|---|---|
| | **Examiner** Michael Trettel | **Art Unit** 3673 | |

All participants (applicant, applicant's representative, PTO personnel):

(1) *Michael Trettel*. (3)_____.

(2) *David Boutell*. (4)_____.

Date of Interview: *16 January 2014*.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☐ No.
If Yes, brief description: _____.

Issues Discussed ☐101 ☐112 ☐102 ☐103 ☒Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: *1-6*.

Identification of prior art discussed: *N/A*.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

*The examiner received an e-mail from Mr. Boutell concerning the Advisory Action, in which Mr. Boutell pointed out the fourth Supplemental Declaration does contain the language that formed the basis of the Advisory Action. The examiner has contacted Mr. Boutell and conducted a short interview in which the merits of the case were discussed. It was agreed that the case is now in condition for allowance, and that the examiner should prepare the case for forwarding to the SPRE for review. If new issues arise the examiner will contact Mr. Boutell to resolve them.*

**Applicant recordation instructions**: It is not necessary for applicant to provide a separate record of the substance of interview.

**Examiner recordation instructions**: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

| /Michael Trettel/<br>Primary Examiner, Art Unit 3673 | |
|---|---|



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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 01/13/2014

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 01/13/2014 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Advisory Action Before the Filing of an Appeal Brief

| Application No. | Applicant(s) | | |
|---|---|---|---|
| 13/068,358 | LAMBARTH, CLIFFORD E. | | |
| **Examiner** | **Art Unit** | **AIA (First Inventor to File) Status** | |
| Michael Trettel | 3673 | No | |

***--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

THE REPLY FILED 23 December 2013 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

NO NOTICE OF APPEAL FILED

1. ☒ The reply was filed after a final rejection. No Notice of Appeal has been filed. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114 if this is a utility or plant application. Note that RCEs are not permitted in design applications. The reply must be filed within one of the following time periods:
   a) ☐ The period for reply expires _____months from the mailing date of the final rejection.
   b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action; or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.
   c) ☐ A prior Advisory Action was mailed more than 3 months after the mailing date of the final rejection in response to a first after-final reply filed within 2 months of the mailing date of the final rejection. The current period for reply expires months from the mailing date of *the prior Advisory Action* or SIX MONTHS from the mailing date of the final rejection, whichever is earlier.

   *Examiner Note*: If box 1 is checked, check either box (a), (b) or (c). ONLY CHECK BOX (b) WHEN THIS ADVISORY ACTION IS THE FIRST RESPONSE TO APPLICANT'S FIRST AFTER-FINAL REPLY WHICH WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. ONLY CHECK BOX (c) IN THE LIMITED SITUATION SET FORTH UNDER BOX (c). See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) or (c) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendments filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   b) ☐ They raise the issue of new matter (see NOTE below);
   c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☒ Applicant's reply has overcome the following rejection(s): the recapture rejection of claims 7, 9, 10, 12, 13, and 15.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): (a) ☐ will not be entered, or (b) ☒ will be entered, and an explanation of how the new or amended claims would be rejected is provided below or appended.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
9. ☐ The affidavit or other evidence filed after final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
10. ☐ The affidavit or other evidence filed after the date of filing the Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
11. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

12. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
13. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). _____
14. ☒ Other: See Continuation Sheet.

STATUS OF CLAIMS

15. The status of the claim(s) is (or will be) as follows:
    Claim(s) allowed: .
    Claim(s) objected to: .
    Claim(s) rejected: 1-6.
    Claim(s) withdrawn from consideration: .

/Michael Trettel/
Primary Examiner, Art Unit 3673

Continuation of 14. Other: the supplemental reissue declaration does not have the required statement of every error which was corrected in the reissue application not covered by prior oaths/declarations arose without any deceptive intention of the part of the applicant. It is strongly suggested that the following statement be used as written: "Every error in the patent which was corrected in the present reissue application, and is not covered by the prior declaration submitted in this application, arose without any deceptive intention on the part of the applicant." See MPEP §1414.01.

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

December 23, 2013

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

AMENDMENT TO FINAL REJECTION

Sir:

In response to the Office Action dated November 6, 2013, please amend the above-identified application as follows:

(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

CONSIDERED: /M.T./

01/02/2014

RESPONSE UNDER 37 CFR 1.116
EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

December 23, 2013

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

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Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

AMENDMENT TO FINAL REJECTION

Sir:

In response to the Office Action dated November 6, 2013, please amend the above-identified application as follows:

(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame; and

wherein said litter [base] frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame, said first mount [and] being oriented in a path of movement of said [first mount] first crosswise member as said litter frame becomes proximate said base frame so that said [first mount] first crosswise member engages and rests upon said [at least one first crosswise member] first mount, and wherein said base [litter]

frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base [litter] frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. (Previously Presented) The ambulance cot according to claim 1, wherein said first and second mounts each engage [and rest upon] respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter [base] frame, said first mount being configured to [respectively] engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

4. (Previously Presented) The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said base frame.

5. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base [litter] frame, said first mount being configured to [respectively] engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails, said first mount [and] being oriented in a path of movement of said [first mount] at least one crosswise member as said litter frame becomes proximate said base frame so that said [first mount] at least one crosswise member engages and rests upon said [at least one crosswise member] first mount.

6. (Previously Presented) The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said litter frame.

7. Canceled.

8. Canceled.

9. Canceled.

10. Canceled.

11. Canceled.

12. Canceled.

13. Canceled.

14. Canceled.

15. Canceled.

**REMARKS**

Status of Patent Claims:

Patent Claims 1-6 remain as "Previously Presented". The Reissue Claims 7-15 are canceled. Reconsideration of the above set forth Patent Claims 1-6 is respectfully solicited.

Fourth Supplemental Reissue Application Declaration by Inventor:

The enclosed Fourth Supplemental Declaration sets forth the required language requested by the Examiner.

Reconsideration of the enclosed Fourth Supplemental Reissue Application Declaration by Inventor is respectfully solicited.

Further and favorable consideration of this reply is respectfully solicited.

Respectfully submitted,

David G. Boutell

DGB/kc

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Kalamazoo, MI 49008-1631
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Terryence F. Chapman Reg. No. 32 549
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Eugene J. Rath III Reg. No. 42 094
Marcus P. Dolce Reg. No. 46 073
David G. Boutell Reg. No. 25 072
Sidney B. Williams, Jr. Reg. No. 24 949

Encl: FOURTH SUPPLEMENTAL REISSUE APPLICATION DECLARATION BY INVENTOR

136.10/11

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

FOURTH SUPPLEMENTAL REISSUE APPLICATION
DECLARATION BY INVENTOR

I hereby declare that: My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 7 540 047 granted on June 2, 2009, and for which a reissue patent is sought on the invention entitled AMBULANCE COT WITH PINCH SAFETY FEATURE, the application of which was filed on May 9, 2011 as reissue application no. 13/068,358 and is being amended concurrently herewith. I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims as amended by amendments filed on June 6, 2012, September 6, 2012 and January 17, 2013, and the amendment filed concurrently herewith and referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37 CFR 1.56.

I do not claim foreign priority benefits under Title 35 USC 119 of any foreign application(s) for patent or inventor's certificate.

I verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of other errors.

Specifically, Patent Claims 1, 3 and 5 are defective because they are not supported by the specification. More specifically, the specification describes an ambulance cot 10 comprising a base frame 11, a litter frame 17 and an X-frame support mechanism 18 including at least pair of frame members 19 and 21 pivotally secured to each other proximate the mid-length portions by an axle 24. The frame members 19 and 21 each have opposite ends secured respectively to one of the base frame 11 and the litter frame 17 (Col. 4, lines 8-54). A first mount 226 is oriented between the mid-length of the frame members and the base frame 11. The first mount 226 is configured to move into and out of engagement with the litter frame 17. A second mount 227 is oriented between the mid-length of the frame members and the litter frame 17. The second mount 227 is configured to move into and out of engagement with the base frame 11. The base frame 11 has side rails 12 and at least one crosswise member 13 interconnecting the side rails 12. The litter frame 11 has side rails 66 and at least one crosswise member interconnecting the side rails 66 (Col. 19, lines 38-44).

Patent Claim 1 Defect:

The defect in Patent Claim 1 is that it is recited that at least one of the pair of frame members 19 and 21 have a "first mount" 226 oriented between the mid-length thereof and the base

frame 11 and that at least one of the frame members 19 and 21 have a "second mount" 227 oriented between the mid-length thereof and the litter frame 17. Toward the end of the third paragraph of Patent Claim 1 it is recited that the first mount 226 and the second mount 227 are configured to "respectively engage" the base frame 11 and the litter frame 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 226 being configured to engage the base frame 11 nor does it provide support for the second mount 227 being configured to engage the litter frame 17.

The amendment to Patent Claim 1 is intended to remedy the defect by reciting in Reissue Claim 1 that the first and second mounts are configured to "respectively engage" the "litter frame" 17 and the "base frame" 11.

Patent Claim 3 Defect:

Patent Claim 3 recites that the "first mount" 226 is oriented between the mid-length of the frame members 19 and 21 and the base frame 11. The defect in Patent Claim 3 occurs toward the end of the third paragraph of Patent Claim 3 wherein it is recited that the first mount 226 is configured to "respectively engage" the "base frame" 11 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 226 being configured to engage the base frame 11. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 3 is intended to remedy the defect in Patent Claim 3 by reciting that the first mount 226 is configured to "engage" the "litter frame" 17.

Patent Claim 5 Defect:

Patent Claim 5 recites that the "first mount" (here it is mount 227) is oriented between the mid-length of the frame members 19 and 21 and the litter frame 17. The defect in Patent Claim 5 occurs toward the end of the third paragraph of Claim 5 wherein it is recited that the first mount 227 is configured to "respectively engage" the "litter frame" 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 227 being configured to engage the litter frame 17. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 5 is intended to remedy the defect in Patent Claim 5 by reciting that the first mount 227 is configured to "engage" the "base frame" 11.

Every error in the patent which was corrected in the present reissue application, and is not covered by the prior declaration submitted in this application, arose without any deceptive intention on the part of the applicant.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon, or any patent to which this declaration is directed.

Sole
Inventor's
Signature Clifford E Lambarth Date 12/19/13

Full name of sole inventor: Clifford E. Lambarth
Residence: Portage, Michigan
Citizenship: United States
Post Office Address: 10801 Cora Drive, Portage, MI 49002

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 17737665 |
| **Application Number:** | 13068358 |
| **International Application Number:** | |
| **Confirmation Number:** | 6260 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Correspondence Address:** | FLYNN, THIEL, BOUTELL & TANIS, P.C.<br>-<br>2026 RAMBLING ROAD<br>-<br>KALAMAZOO MI 49008-1631<br>US 2693811156<br>- |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Filer Authorized By:** | David G. Boutell |
| **Attorney Docket Number:** | 3007.P0418US |
| **Receipt Date:** | 23-DEC-2013 |
| **Filing Date:** | 09-MAY-2011 |
| **Time Stamp:** | 11:30:57 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

EXHIBIT 1004 PAGE0057

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 3007P0418USAmendmentAfterFinalRejection12232013.pdf | 780439<br>4d17e7cd266ef6483c9177e391106346cd8c3c96 | yes | 11 |

**Multipart Description/PDF files in .zip description**

| Document Description | Start | End |
|---|---|---|
| Response After Final Action | 1 | 1 |
| Claims | 2 | 5 |
| Applicant Arguments/Remarks Made in an Amendment | 6 | 6 |
| Supp reissue dec filed in accord with MPEP 1414.01. | 7 | 11 |

**Warnings:**

**Information:**

| Total Files Size (in bytes): | 780439 |
|---|---|

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

| PATENT APPLICATION FEE DETERMINATION RECORD<br>Substitute for Form PTO-875 | Application or Docket Number<br>13/068,358 | Filing Date<br>05/09/2011 | ☐ To be Mailed |
|---|---|---|---|

**ENTITY**: ☒ LARGE ☐ SMALL ☐ MICRO

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | | |
|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| | | (Column 1) | | (Column 2) | (Column 3) | | |
|---|---|---|---|---|---|---|---|
| | **12/23/2013** | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) |
| AMENDMENT | Total (37 CFR 1.16(i)) | * 6 | Minus | ** 20 | = 0 | X $80 = | 0 |
| | Independent (37 CFR 1.16(h)) | * 3 | Minus | ***6 | = 0 | X $420 = | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | |
| | | | | | | TOTAL ADD'L FEE | **0** |

| | | (Column 1) | | (Column 2) | (Column 3) | | |
|---|---|---|---|---|---|---|---|
| | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) |
| AMENDMENT | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | |
| | | | | | | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DIANA BATES/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 11/06/2013

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |
| ART UNIT | PAPER NUMBER |
| 3673 | |
| MAIL DATE | DELIVERY MODE |
| 11/06/2013 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

| Application No. | Applicant(s) | | |
|---|---|---|---|
| 13/068,358 | LAMBARTH, CLIFFORD E. | | |
| **Examiner** | **Art Unit** | **AIA (First Inventor to File) Status** | |
| Michael Trettel | 3673 | No | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)☒ Responsive to communication(s) filed on *01/17/2013*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

5)☒ Claim(s) *1-7,9,10,12,13 and 15* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-7,9,10,12,13,15* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

## Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

## Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

a)☐ All b)☐ Some * c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

## DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

### *Reissue Applications*

The supplemental reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414.01) because of the following:

The supplemental reissue oath/declaration must state that every error which was corrected in the reissue application not covered by the prior oath(s)/declaration(s) submitted in the application arose without any deceptive intention on the part of the applicant.

An example of acceptable language is as follows:

"Every error in the patent which was corrected in the present reissue application, and is not covered by the prior declaration submitted in this application, arose without any deceptive intention on the part of the applicant."

Claims 1-7, 9, 10, 12, 13, and 15 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

Claims 7, 9, 10, 12, 13, 5 are rejected under 35 U.S.C. 251 as being an impermissible recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. See *North American Container, Inc. v. Plastipak Packaging, Inc.,* 415 F.3d 1335, 75 USPQ2d 1545 (Fed. Cir. 2005); *Pannu v. Storz Instruments' Inc.,* 258 F.3d 1366, 59 USPQ2d 1597 (Fed. Cir. 2001); *Hester Industries, Inc. v. Stein, Inc.,* 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement,* 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997); *Ball Corp. v. United States,* 729 F.2d 1429, 1436, 221 USPQ 289, 295 (Fed. Cir. 1984).

A broadening aspect is present in the reissue which was not present in the application for patent. The record of the application for the patent shows that the broadening aspect (in the reissue) relates to claim subject matter that applicant previously surrendered during the prosecution of the application for the patent. Accordingly, the narrow scope of the claims in the patent was not an error within the meaning of 35 U.S.C. 251, and the broader scope of claim subject matter surrendered in the application for the patent cannot be recaptured by the filing of the present reissue application.

In claims 7, 9, 10, 12, 13, and 15 the applicant has totally removed the recitations of the crosswise members interconnecting the side rails of either the litter frame (claim 7) or the base frame (claims 1 and 3). This limitation was added to secure the allowance of independent claims 1, 3, and 7 in the amendment dated January 26, 2009 to parent application 12/002958. This limitation has now been replaced with the broader limitation of a crosswise extending member "on at least one of said side members" of either the litter frame (claims 7 and 10) or the base frame (claim 13). The applicant has justified this removal by stating that claims 7-15 now

contain an overlooked aspect with respect to the relative widths of the litter frame, the X-frame, and the base frame and their relationship to the crosswise extending member. The overlooked aspect is specifically recited as being the litter frame and base frame being wider than the X-frame (claim 7), the litter frame being wider than the X-frame (claim 10), and the base frame being wider than the X-frame (claim 13), further combined with the position of the crosswise extending member that does not extend between and connect to the side rails of the base frame and/or the placement of the mounts 226, 227. The overlooked aspect is now defined as claims whose subject matter is wholly unrelated to the subject matter that was previously claimed, whereby the recapture rule would not be triggered. See *In re. Mostafazedah* (98 USPQ 2d 1639). In this particular case changing the statement of where the crosswise member is located from interconnecting the side rails to the more generic term of "on at least one of the side members" is an attempt at recapture, since it broadens the specific meaning of the term as added to the claims in order to secure an allowance of the claims. Since this is clearly not “wholly unrelated” to the subject matter as previously claimed the argument that the claims are now drawn to an overlooked aspect is unpersuasive. The crux of the applicant’s argument is that the specific location of the crosswise member as set forth in the claims is too limiting and can be easily avoided by a competitor, and so the error being corrected resides in changing this location to a more general limitation combined with the inclusion of other limitations drawn to the relative widths of the litter frame, base frame, and X-frame. As noted in the previous action, the widths of the frames are not a patentable distinction of and by itself which is required for the recapture rule to not be triggered. See, for example, Ward et al (US 2007/0000056), Reed et al (US 7,389,552), Flynn et al (US 6,389,623), and Way et al (US 5,576,026) all of which show the use

of an X-frame that is narrower in width than the litter and base frames of a gurney type stretcher. These particular limitations drawn to the width of the frames are not critical to the patentability of claims 7, 9, 10, 12, 13, and 15 since it appears to be based upon knowledge common in the prior art. The limitations drawn to the location of the crosswise member are based upon recapture since to avoid the recapture rule the complete limitation must be present in its entirety as set forth in the patent claims. This is clearly not so in the present case, since as admitted by the applicant in the arguments of January 17 the particular limitation stating that it is interconnecting the side rails is a mistake of and by itself. While this may be a desirable goal for the applicant, this error is not one that can be corrected by reissue since it has been surrendered during the prosecution of the parent application.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Trettel whose telephone number is (571)272-7052. The examiner can normally be reached on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pete Cuomo can be reached on (571) 272-6856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Trettel
Primary Examiner
Art Unit 3673

/Michael Trettel/
Primary Examiner, Art Unit 3673

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 02/17/2012 | 06/29/2012 | 10/04/2012 | 11/04/2013 | | | | | |
| 1 | 1 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 2 | 2 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 3 | 3 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 4 | 4 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 5 | 5 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 6 | 6 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 7 | 7 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 8 | ✓ | - | - | - | | | | | |
| 9 | 9 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 10 | 10 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 11 | ✓ | - | - | - | | | | | |
| 12 | 12 | ✓ | ✓ | ✓ | ✓ | | | | | |
| 13 | 13 | ✓ | ✓ | ✓ | ✓ | | | | | |
| | 14 | ✓ | - | - | - | | | | | |
| 15 | 15 | ✓ | ✓ | ✓ | ✓ | | | | | |

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | Examiner | Art Unit |
| | MICHAEL TRETTEL | 3673 |

| CPC- SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| CPC COMBINATION SETS - SEARCHED | | |
|---|---|---|
| Symbol | Date | Examiner |
| | | |

| US CLASSIFICATION SEARCHED | | | |
|---|---|---|---|
| Class | Subclass | Date | Examiner |
| 5 | 11, 611, 118, 86.1 | 2/17/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 2/17/2012 | MT |
| 254 | 2R, 8R, 9R | 2/17/2012 | MT |

| SEARCH NOTES | | |
|---|---|---|
| Search Notes | Date | Examiner |
| Search updated. | 6/29/2012 | MT |
| Search updated. | 10/4/2012 | MT |
| Search updated. | 11/4/2013 | MT |

| INTERFERENCE SEARCH | | | |
|---|---|---|---|
| US Class/ CPC Symbol | US Subclass / CPC Group | Date | Examiner |
| 5 | 11, 611, 118, 86.1 | 10/4/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 10/4/2012 | MT |
| 254 | 2R, 8R, 9R | 10/4/2012 | MT |

| | |
|---|---|
| | |

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

January 17, 2013

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

AMENDMENT TO NON-FINAL REJECTION

Sir:

In response to the Office Action dated November 8, 2012, please amend the above-identified application as follows:

(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame; and

wherein said litter [base] frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame, said first mount [and] being oriented in a path of movement of said [first mount] first crosswise member as said litter frame becomes proximate said base frame so that said [first mount] first crosswise member engages and rests upon said [at least one first crosswise member] first mount, and wherein said base [litter]

frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base [litter] frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. (Previously Presented) The ambulance cot according to claim 1, wherein said first and second mounts each engage [and rest upon] respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter [base] frame, said first mount being configured to [respectively] engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

4. (Previously Presented) The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said base frame.

5. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base [litter] frame, said first mount being configured to [respectively] engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails, said first mount [and] being oriented in a path of movement of said [first mount] at least one crosswise member as said litter frame becomes proximate said base frame so that said [first mount] at least one crosswise member engages and rests upon said [at least one crosswise member] first mount.

6. (Previously Presented) The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said litter frame.

7. (Previously Presented) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said litter frame and said base frame in response to said litter frame becoming proximate said base frame;

said litter frame having longitudinally extending side rails and at least one first crosswise extending member on at least one of said side rails of said litter frame, said first mount being oriented in a path of movement of said at least one first crosswise extending member as said litter frame becomes proximate said base frame so that said at least one first crosswise extending member engages and rests upon said first mount, and wherein said base frame has longitudinally extending side rails and at least one second crosswise extending member on at least one of said side rails of said base frame and being

oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise extending member.

8. Canceled

9. (Previously Presented) The ambulance cot according to claim 7, wherein said first and second mounts each engage respective ones of said at least one first and second crosswise extending members between the respective said side rails of said litter frame and said base frame.

10. (Previously Presented) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to engage said litter frame in response to said litter frame becoming proximate said base frame;

said litter frame having longitudinally extending side rails and at least one crosswise extending member on at least one of said side rails, said first mount being oriented in a path of movement of said at least one crosswise extending member as said litter frame becomes proximate said base frame so that said one crosswise extending member engages and rests upon said first mount.

11. Canceled.

12. (Previously Presented) The ambulance cot according to claim 10, wherein said first mount engages said at least one crosswise extending member between the respective said side rails of said litter frame.

13. (Previously Presented) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to engage said base frame in

response to said litter frame becoming proximate said base frame;

said base frame having longitudinally extending side rails and at least one crosswise extending member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise extending member.

14. Canceled.

15. (Previously Presented) The ambulance cot according to claim 13, wherein said first mount engages said at least one crosswise extending member between the respective said side rails of said base frame.

**REMARKS**

Status of Patent Claims and New Claims:

Patent Claim 1 has been further amended in line 29 and in accordance with the Examiner's observation appearing on page 5 of the Office Action, first paragraph. Patent Claims 2-6 and Reissue Claims 7, 9-10, 12-13 and 15 remain as "Previously Presented". Reconsideration of the above set forth Patent Claims 1-6 and Reissue Claims 7, 9-10, 12-13 and 15 is respectfully solicited.

Third Supplemental Reissue Application Declaration by Inventor:

The enclosed Third Supplemental Declaration sets forth the required language expressing the dates of the previous amendments made in the prosecution of this Reissue application and the language expressing that Patent Claims 1, 3 and 5 are defective because they are not supported by the specification.

Comments traversing the Examiner's application of the recapture rule to Reissue Claims 7, 9-10, 12-13 and 14-15:

Applicant's comments in the amendment filed on June 6, 2012 regarding the lack of recapture in the Reissue claims are to be incorporated herein.

As stated heretofore, the original Patent Claims are devoid of any reference to the relative widths of the litter frame, the base frame and the X-frame support mechanism and the Examiner has conceded this point. Thus, the Patent Claims could be interpreted to mean that the litter frame, the X-frame support mechanism and the base frame could have any relative width with respect to one another. Unexpectedly, the Examiner has apparently required that the reference to the relative widths of the litter frame, the base frame and the X-frame support mechanism be patentable per se and has cited four references on page 3 of the Office Action that show the relative width

features. What is not shown in those references is a crosswise member on the base frame that does not extend between and connect to the side rails of the base frame or the placement of mounts 226 and 227 at specific locations on the X-frame support mechanism in combination with a construction requiring the relative width of the X-frame support mechanism to be less than the relative widths of the litter frame and the base frame. As a result of Applicant's unique combination, and as the litter frame is lowered, the mount 226 at one location on the X-frame support mechanism (and automatically oriented between the side rails of the litter frame due to the recitation of the relative width of the X-frame support mechanism being less than the relative width of the litter frame) will be oriented in the path of movement of the crosswise member on the litter frame to eventually cause the crosswise member on the litter frame to rest upon the mount 226. Simultaneously therewith, the crosswise member on the base frame is oriented in the path of movement of the mount 227 at another location on the X-frame support mechanism (and automatically oriented between the side rails of the base frame due to the recitation of the relative width of the X-frame support mechanism being less than the relative width of the base frame) to eventually cause the mount 227 to rest upon the crosswise member on the base member. Since the location of the point of engagement the respective crosswise member with a mount is inside of the wider side rails of the either the litter frame or the base frame, Applicant has provided a novel and patentable way of preventing a pinching of a cot attendant's fingers between the side rails of the base frame and the litter frame. It is the aforementioned combination of features that is narrower than any of the Original Patent Application Claims and broader than any of the Patent Claims. Applicant wishes to point out to the Examiner that a competitor could note that the scope of the Patent Claims requires the crosswise member to extend between and connect to

the side rails of the base frame and realize a very easy and simple way to avoid the Patent Claims by simply designing a crosswise member so that it would not extend between and connect to the side rails of the base frame. This easy avoidance tactic, if employed by a competitor, is the overlooked aspect of the disclosed invention as mentioned in MPEP Section 1412.02 and the discussion re "The Third Step" and the second analysis which states:

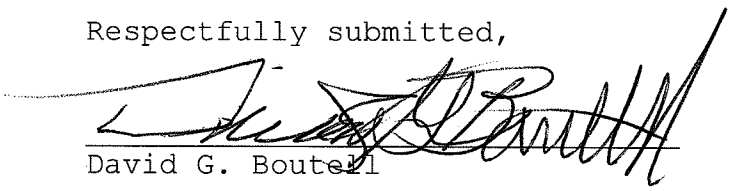
> "If, however, the reissue claim(s) are really claiming additional inventions/embodiments/species not originally claimed (i.e., overlooked aspects of the disclosed invention), then recapture will not be present."

The Examiner's rejection has not discussed the patentability of the "overlooked" combination of features mentioned above.

Reconsideration of the enclosed Third Supplemental Reissue Application Declaration by Inventor and the Examiner's recapture implementation rejection of Reissue Claims 7, 10 and 13 are respectfully solicited.

Further and favorable consideration of this reply is respectfully solicited.

Respectfully submitted,



DGB/kc

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Sidney B. Williams, Jr. Reg. No. 24 949

Encl: THIRD SUPPLEMENTAL REISSUE APPLICATION DECLARATION BY INVENTOR
136.10/11

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

THIRD SUPPLEMENTAL REISSUE APPLICATION
DECLARATION BY INVENTOR

I hereby declare that: My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 7 540 047 granted on June 2, 2009, and for which a reissue patent is sought on the invention entitled AMBULANCE COT WITH PINCH SAFETY FEATURE, the application of which was filed on May 9, 2011 as reissue application no. 13/068,358 and is being amended concurrently herewith. I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims as amended by amendments filed on June 6, 2012 and September 6, 2012, and the amendment filed concurrently herewith and referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37 CFR 1.56.

I do not claim foreign priority benefits under Title 35 USC 119 of any foreign application(s) for patent or inventor's certificate.

I verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of patentee claiming less than he had a right to claim in the patent.

This reissue is a broadening reissue and the nature of the broadening relates to the language of Reissue Claim 7 which provides a scope that is intermediate the scope of Original Claim 1 and Patent Claim 1 due in part to Reissue Claim 7 not reciting the crosswise members interconnecting the side rails on the base frame and the litter frame and, instead, reciting the overlooked feature of the base frame and the litter frame having widths that are recited as being greater than the width of the X-frame support mechanism to cause the first and second mounts to engage the first and second crosswise members on the base frame and the litter frame, respectively somewhere between the side extremities of the base frame and the litter frame but not necessarily crosswise members that interconnect the side rails on the base frame and the litter frame as specifically recited in Patent Claim 1.

Another broadening is present in Reissue Claim 10. The language of Reissue Claim 10 claims an overlooked feature of the invention to provide a scope that is intermediate the scope of Original Claim 4 and Patent Claim 3 due in part to Reissue Claim 10 not reciting at least one crosswise member interconnecting the side rails on the litter frame and, instead, reciting the overlooked feature of the litter frame having a width that is greater than the width of the X-frame support mechanism to cause

the first mount to engage the at least one crosswise member on the litter frame somewhere between the side extremities of the litter frame but not necessarily a crosswise member interconnecting the side rails of the litter frame as specifically recited in Patent Claim 3.

Another broadening is present in Reissue Claim 13. The language of Reissue Claim 13 claims an overlooked feature of the invention provide a scope that is intermediate the scope of Original Claim 7 and Patent Claim 5 due in part to Reissue Claim 13 not reciting at least one crosswise member interconnecting the side rails on the base frame and, instead, reciting the overlooked base frame having a width that is recited as being greater than the width of the X-frame support mechanism to cause the first mount to engage the at least one crosswise member on the base frame somewhere between the side extremities of the base frame but not necessarily a crosswise member interconnecting the side rails on the base frame as specifically recited in Patent Claim 5.

I additionally verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of other errors.

Specifically, Patent Claims 1, 3 and 5 are defective because they are not supported by the specification. More specifically, the specification describes an ambulance cot 10 comprising a base frame 11, a litter frame 17 and an X-frame support mechanism 18 including at least pair of frame members 19 and 21 pivotally secured to each other proximate the mid-length portions by an axle 24. The frame members 19 and 21 each have opposite ends secured respectively to one of the base frame 11 and the litter frame 17 (Col. 4, lines 8-54). A first mount 226 is oriented between the mid-length of the frame members and the base frame 11. The first mount 226 is configured to move into and out of engagement with the litter frame 17. A second mount

227 is oriented between the mid-length of the frame members and the litter frame 17. The second mount 227 is configured to move into and out of engagement with the base frame 11. The base frame 11 has side rails 12 and at least one crosswise member 13 interconnecting the side rails 12. The litter frame 11 has side rails 66 and at least one crosswise member interconnecting the side rails 66 (Col. 19, lines 38-44).

Patent Claim 1 Defect:

The defect in Patent Claim 1 is that it is recited that at least one of the pair of frame members 19 and 21 have a "first mount" 226 oriented between the mid-length thereof and the base frame 11 and that at least one of the frame members 19 and 21 have a "second mount" 227 oriented between the mid-length thereof and the litter frame 17. Toward the end of the third paragraph of Patent Claim 1 it is recited that the first mount 226 and the second mount 227 are configured to "respectively engage" the base frame 11 and the litter frame 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 226 being configured to engage the base frame 11 nor does it provide support for the second mount 227 being configured to engage the litter frame 17.

The amendment to Patent Claim 1 is intended to remedy the defect by reciting in Reissue Claim 1 that the first and second mounts are configured to "respectively engage" the "litter frame" 17 and the "base frame" 11.

Patent Claim 3 Defect:

Patent Claim 3 recites that the "first mount" 226 is oriented between the mid-length of the frame members 19 and 21 and the base frame 11. The defect in Patent Claim 3 occurs toward the end of the third paragraph of Patent Claim 3 wherein

it is recited that the first mount 226 is configured to "respectively engage" the "base frame" 11 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 226 being configured to engage the base frame 11. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 3 is intended to remedy the defect in Patent Claim 3 by reciting that the first mount 226 is configured to "engage" the "litter frame" 17.

Patent Claim 5 Defect:

Patent Claim 5 recites that the "first mount" (here it is mount 227) is oriented between the mid-length of the frame members 19 and 21 and the litter frame 17. The defect in Patent Claim 5 occurs toward the end of the third paragraph of Claim 5 wherein it is recited that the first mount 227 is configured to "respectively engage" the "litter frame" 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide support for the first mount 227 being configured to engage the litter frame 17. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 5 is intended to remedy the defect in Patent Claim 5 by reciting that the first mount 227 is configured to "engage" the "base frame" 11.

All errors being corrected in the present reissue application up to the time of filing of this declaration arose without any deceptive intention on the part of the applicant.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information

and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon, or any patent to which this declaration is directed.

Sole Inventor's Signature Clifford E Lambarth Date 1-17-13

Full name of sole inventor: Clifford E. Lambarth
Residence: Portage, Michigan
Citizenship: United States
Post Office Address: 10801 Cora Drive, Portage, MI 49002

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 14726281 |
| **Application Number:** | 13068358 |
| **International Application Number:** | |
| **Confirmation Number:** | 6260 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Correspondence Address:** | FLYNN, THIEL, BOUTELL & TANIS, P.C.<br>-<br>2026 RAMBLING ROAD<br>-<br>KALAMAZOO MI 49008-1631<br>US 2693811156<br>- |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Filer Authorized By:** | David G. Boutell |
| **Attorney Docket Number:** | 3007.P0418US |
| **Receipt Date:** | 17-JAN-2013 |
| **Filing Date:** | 09-MAY-2011 |
| **Time Stamp:** | 15:23:33 |
| **Application Type:** | Utility under 35 USC 111(a) |

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| Submitted with Payment | no |

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EXHIBIT 1004 PAGE0086

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 3007P0418USResponse01172013.pdf | 786948<br>674248ebac5e2ede81f34c3c3812eba36350a91d | yes | 17 |

**Multipart Description/PDF files in .zip description**

| Document Description | Start | End |
|---|---|---|
| Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| Claims | 2 | 8 |
| Applicant Arguments/Remarks Made in an Amendment | 9 | 11 |
| Supp reissue dec filed in accord with MPEP 1414.01. | 12 | 17 |

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PTO/SB/06 (09-11)
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| PATENT APPLICATION FEE DETERMINATION RECORD<br>Substitute for Form PTO-875 | Application or Docket Number<br>13/068,358 | Filing Date<br>05/09/2011 | ☐ To be Mailed |
|---|---|---|---|

**ENTITY**: ☒ LARGE ☐ SMALL ☐ MICRO

## APPLICATION AS FILED – PART I

| | (Column 1) | (Column 2) | | |
|---|---|---|---|---|
| FOR | NUMBER FILED | NUMBER EXTRA | RATE ($) | FEE ($) |
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| | | (Column 1) | | (Column 2) | (Column 3) | | |
|---|---|---|---|---|---|---|---|
| | 01/17/2013 | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) |
| AMENDMENT | Total (37 CFR 1.16(i)) | * 12 | Minus | ** 20 | = 0 | X $62 = | 0 |
| | Independent (37 CFR 1.16(h)) | * 6 | Minus | ***6 | = 0 | X $250 = | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | |
| | | | | | | TOTAL ADD'L FEE | 0 |

| | | (Column 1) | | (Column 2) | (Column 3) | | |
|---|---|---|---|---|---|---|---|
| | | CLAIMS REMAINING AFTER AMENDMENT | | HIGHEST NUMBER PREVIOUSLY PAID FOR | PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) |
| AMENDMENT | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | |
| | | | | | | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

SLIE
/SHANDA ROSS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 11/08/2012

FLYNN, THIEL, BOUTELL & TANIS, P.C.
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| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |
| ART UNIT | PAPER NUMBER |
| 3673 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 11/08/2012 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 13/068,358 | LAMBARTH, CLIFFORD E. | |
| | Examiner | Art Unit | |
| | Michael Trettel | 3673 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *06 September 2012*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *1-7,9,10,12,13 and 15* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-7,9,10,12,13,15* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

The finality of the previous Office Action has been withdrawn and the Rule 116 amendment of September 6, 2012 has entered. A new Office Action is set forth below.

### *Reissue Applications*

Claims 7-15 are rejected under 35 U.S.C. 251 as being an impermissible recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. See *North American Container, Inc. v. Plastipak Packaging, Inc.*, 415 F.3d 1335, 75 USPQ2d 1545 (Fed. Cir. 2005); *Pannu v. Storz Instruments Inc.*, 258 F.3d 1366, 59 USPQ2d 1597 (Fed. Cir. 2001); *Hester Industries, Inc.* v. *Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement,* 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997)*; Ball Corp.* v. *United States*, 729 F.2d 1429, 1436, 221 USPQ 289, 295 (Fed. Cir. 1984). A broadening aspect is present in the reissue which was not present in the application for patent. The record of the application for the patent shows that the broadening aspect (in the reissue) relates to claim subject matter that applicant previously surrendered during the prosecution of the application for the patent. Accordingly, the narrow scope of the claims in the patent was not an error within the meaning of 35 U.S.C. 251, and the broader scope of claim subject matter surrendered in the application for the patent cannot be recaptured by the filing of the present reissue application.

In claims 7, 9, 10, 12, 13, and 15 the applicant has totally removed the recitations of the crosswise members interconnecting the side rails. This limitation was added to secure the

allowance of independent claims 1, 3, and 7 in the amendment dated January 26, 2009 to parent application 12/002958. The applicant has justified this removal by stating that claims 7-15 now contain an overlooked aspect with respect to the relative widths of the litter frame, the X-frame, and the base frame. The overlooked aspect is specifically recited as being the litter frame and base frame being wider than the X-frame (claim 7), the litter frame being wider than the X-frame (claim 10), and the base frame being wider than the X-frame (claim 13). The overlooked aspect is now defined as claims whose subject matter is wholly unrelated to the subject matter that was previously claimed, whereby the recapture rule would not be triggered. See *In re. Mostafazedah* (98 USPQ 2d 1639). The overlooked aspect relied upon by the applicant is not a patentable distinction of and by itself which is required for the recapture rule to not be triggered. See, for example, Ward et al (US 2007/0000056), Reed et al (US 7,389,552), Flynn et al (US 6,389,623), and Way et al (US 5,576,026) all of which show the use of an X-frame that is narrower in width than the litter and base frames of a gurney type stretcher. It is not seen how the addition of these limitations are critical to the patentability of claims 7, 9, 10, 12, 13, and 15 since it appears to be based upon knowledge common in the prior art. It is also unclear how these claims are claiming a patentably distinct invention wholly unrelated to the subject matter of claims 1-6 since the applicant has not presented any arguments to that effect.

The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following:

The first paragraph of the supplemental reissue declaration filed on September 6, 2012 is defective because of the language "including the claims as amended by any amendment referred

to above". This needs to be replaced with a listing of the filing dates of the specific amendments, as required by 37 CFR 1.63(b)(2).

The reissue oath/declaration filed with this application is defective because the error which is relied upon to support the reissue application is not an error upon which a reissue can be based. See 37 CFR 1.175(a)(1) and MPEP § 1414.

Specifically the applicant has stated on pages 3-5 of the supplemental reissue declaration of November 6, 2012 that Patent Claims 1, 3, and 5 are defective because they are not enabled. This terminology is incorrect since under 35 USC 112 it is the specification that is enabled while the claims are supported by the specification. It appears that the error being relied upon is that Patent Claims 1, 3, and 5 are not supported by the specification, and as such that is what the declaration needs to say.

Claims 1-7, 9, 10, 12, 13, and 15 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

In addition the applicant must submit the following statement with respect to the changes made to the claims. Each amendatory change, when first submitted, must be accompanied by an explanation of the support in the disclosure of the patent for the change (along with any additional comments) on page(s) separate from the page(s) containing the amendment. 37 CFR 1.173(c).

Claim 1 is objected to since it has not been amended as required by 37 CFR 1.173. Specifically in line 29 "base" needs to be underlined since it is an addition to the claim language.

## *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Trettel whose telephone number is (571)272-7052. The examiner can normally be reached on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pete Cuomo can be reached on (571) 272-6856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Trettel
Primary Examiner
Art Unit 3673

/Michael Trettel/
Primary Examiner, Art Unit 3673

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 02/17/2012 | 06/29/2012 | 10/04/2012 | | | | | | |
| 1 | 1 | ✓ | ✓ | ✓ | | | | | | |
| 2 | 2 | ✓ | ✓ | ✓ | | | | | | |
| 3 | 3 | ✓ | ✓ | ✓ | | | | | | |
| 4 | 4 | ✓ | ✓ | ✓ | | | | | | |
| 5 | 5 | ✓ | ✓ | ✓ | | | | | | |
| 6 | 6 | ✓ | ✓ | ✓ | | | | | | |
| 7 | 7 | ✓ | ✓ | ✓ | | | | | | |
| | 8 | ✓ | - | - | | | | | | |
| 9 | 9 | ✓ | ✓ | ✓ | | | | | | |
| 10 | 10 | ✓ | ✓ | ✓ | | | | | | |
| | 11 | ✓ | - | - | | | | | | |
| 12 | 12 | ✓ | ✓ | ✓ | | | | | | |
| 13 | 13 | ✓ | ✓ | ✓ | | | | | | |
| | 14 | ✓ | - | - | | | | | | |
| 15 | 15 | ✓ | ✓ | ✓ | | | | | | |

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# BIB DATA SHEET

**CONFIRMATION NO. 6260**

| SERIAL NUMBER | FILING or 371(c) DATE<br>RULE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | 005 | 3673 | 3007.P0418US |

**APPLICANTS**

Clifford E. Lambarth, Portage, MI;

**** CONTINUING DATA ***************************

This application is a REI of 12/002,958 12/19/2007 PAT 7,540,047
which is a DIV of 11/172,434 06/30/2005 PAT 7,398,571
which claims benefit of 60/613,151 09/24/2004

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****

05/19/2011

| Foreign Priority claimed | 35 USC 119(a-d) conditions met | Verified and Acknowledged | Met after Allowance | STATE OR COUNTRY | SHEETS DRAWINGS | TOTAL CLAIMS | INDEPENDENT CLAIMS |
|---|---|---|---|---|---|---|---|
| ☐ Yes ☑ No | ☐ Yes ☑ No | /MICHAEL TRETTEL/ Examiner's Signature | ☐ MT Initials | MI | 61 | 15 | 6 |

**ADDRESS**

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631
UNITED STATES

**TITLE**

AMBULANCE COT WITH PINCH SAFETY FEATURE

| FILING FEE RECEIVED | | |
|---|---|---|
| 2180 | FEES: Authority has been given in Paper<br>No._____ to charge/credit DEPOSIT ACCOUNT<br>No._____ for following: | ☐ All Fees<br>☐ 1.16 Fees (Filing)<br>☐ 1.17 Fees (Processing Ext. of time)<br>☐ 1.18 Fees (Issue)<br>☐ Other _____<br>☐ Credit |

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | Examiner | Art Unit |
| | MICHAEL TRETTEL | 3673 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 5 | 11, 611, 118, 86.1 | 2/17/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 2/17/2012 | MT |
| 254 | 2R, 8R, 9R | 2/17/2012 | MT |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| Search updated. | 6/29/2012 | MT |
| Search updated. | 10/4/2012 | MT |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 5 | 11, 611, 118, 86.1 | 10/4/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 10/4/2012 | MT |
| 254 | 2R, 8R, 9R | 10/4/2012 | MT |

## EAST Search History

### EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L9 | 787 | (5/611,296/20).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L10 | 444 | (254/2R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L11 | 358 | (254/8R,9R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L12 | 1250 | (5/11,86.1).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L13 | 314 | (108/145,147.2,147.22).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L14 | 1007 | (108/144.11,147).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L15 | 478 | (5/118).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |
| L16 | 4341 | L9 or L10 or L11 or L12 or L13 or L14 or L15 | US-PGPUB; USPAT; EPO | OR | OFF | 2012/10/04 13:48 |

### EAST Search History (Interference)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L17 | 2 | (5/611,296/20).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L18 | 1 | (254/2R).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L19 | 0 | (254/8R,9R).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L20 | 1 | (5/11,86.1).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L21 | 1 | (108/145,147.2,147.22).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L22 | 1 | (108/144.11,147).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L23 | 1 | (5/118).CCLS. | UPAD | OR | OFF | 2012/10/04 13:51 |
| L24 | 1885 | 17 or 18 0r 20 or 21 or 22 or 23 | USPAT; UPAD | OR | OFF | 2012/10/04 13:52 |
| L25 | 7 | 17 or 18 or 20 or 21 or 22 or 23 | USPAT; UPAD | OR | OFF | 2012/10/04 13:52 |

**10/4/2012 1:53:13 PM**
**C:\Users\mtrettel\Documents\EAST\Workspaces\13068358.wsp**

OK TO ENTER: /M.T./

10/04/2012

RESPONSE UNDER 37 CFR 1.116 EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

September 6, 2012

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

AMENDMENT AFTER FINAL REJECTION

Sir:

In response to the Office Action dated July 2, 2012, please amend the above-identified application as follows:

(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

RESPONSE UNDER 37 CFR 1.116 EXPEDITED PROCEDURE

IN THE U.S. PATENT AND TRADEMARK OFFICE

September 6, 2012

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

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International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

AMENDMENT AFTER FINAL REJECTION

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(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame; and

wherein said litter [base] frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame, said first mount [and] being oriented in a path of movement of said [first mount] first crosswise member as said litter frame becomes proximate said base frame so that said [first mount] first crosswise member engages and rests upon said [at least one first crosswise member] first mount, and wherein said base [litter]

frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base [litter] frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. (Currently Amended) The ambulance cot according to claim 1, wherein said first and second mounts each engage [and rest upon] respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. (Previously Presented) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter [base] frame, said first mount being configured to [respectively] engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

4. (Currently Amended) The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said base frame.

5. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base [litter] frame, said first mount being configured to [respectively] engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails, said first mount [and] being oriented in a path of movement of said [first mount] at least one crosswise member as said litter frame becomes proximate said base frame so that said [first mount] at least one crosswise member engages and rests upon said [at least one crosswise member] first mount.

6. (Currently Amended) The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member [and] between the respective said side rails of said litter frame.

7. (Currently Amended) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said litter frame and said base frame in response to said litter frame becoming proximate said base frame;

said litter frame having longitudinally extending side rails and at least one first crosswise extending member on at least one of said side rails of said litter frame, said first mount being oriented in a path of movement of said at least one first crosswise extending member as said litter frame becomes proximate said base frame so that said at least one first crosswise extending member engages and rests upon said first mount, and wherein said base frame has longitudinally extending side rails and at least one second crosswise extending member on at least one of said side rails of said base frame and being

oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise extending member.

8. Canceled

9. (Currently Amended) The ambulance cot according to claim 7, wherein said first and second mounts each engage respective ones of said at least one first and second crosswise extending members between the respective said side rails of said litter frame and said base frame.

10. (Currently Amended) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to engage said litter frame in response to said litter frame becoming proximate said base frame;

said litter frame having longitudinally extending side rails and at least one crosswise extending member on at least one of said side rails, said first mount being oriented in a path of movement of said at least one crosswise extending member as said litter frame becomes proximate said base frame so that said one crosswise extending member engages and rests upon said first mount.

11. Canceled.

12. (Currently Amended) The ambulance cot according to claim 10, wherein said first mount engages said at least one crosswise extending member between the respective said side rails of said litter frame.

13. (Previously Presented) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to engage said base frame in

response to said litter frame becoming proximate said base frame;

said base frame having longitudinally extending side rails and at least one crosswise extending member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise extending member.

14. Canceled.

15. (Currently Amended) The ambulance cot according to claim 13, wherein said first mount engages said at least one crosswise extending member between the respective said side rails of said base frame.

**REMARKS**

Status of Patent Claims and New Claims:

Patent Claims 1 and 5 have been further amended in accordance with the Examiner's observation appearing on page 4 of the Office Action, first two paragraphs. Dependent Patent Claims 2, 4 and 6 have been amended to be consistent with their respective independent claim and to conform to the aforesaid Examiner's observation. Claims 7, 10, 12, 13 and 15 have been amended in accordance with the aforementioned Examiner's observation appearing on page 4 of the Office Action. In addition, Claims 7, 10 and 13 have been amended to reference a "crosswise extending member" instead of the previous reference to just "member", this amendment being introduced to bring the claim language into close accord with the specification at column 19, lines 39-44 so as to cure the Examiner's new matter objection.

Second Supplemental Reissue Application Declaration by Inventor:

The enclosed Second Supplemental Declaration sets forth the required language expressing the duty to disclose to the Office all information known to the person to be "material to patentability" under 37 CFR 1.56. In addition, the Declaration sets forth the required language stating that "all errors being corrected in the present reissue application up to the time of filing of this declaration arose without any deceptive intention on the part of the applicant".

Comments about Amendments to the Claims:

Since the amendments to Claims 7, 10 and 13 are believed to cure the new matter objection and since the amendments to

Claims 1, 2, 4, 5, 6, 7, 10, 12, 13 and 15 bring the claim language into close accord with the specification, it is presently believed that this reply to the final rejection places this reissue application in formal condition for allowance. Accordingly, formal notice to such effect is respectfully solicited.

Applicant agrees with the Examiner's assertion that the specification references a "crosswise extending rail" on the base frame and a "cross rail" on the litter frame and, accordingly, all of the claims now present in this reissue application reference a "crosswise member" (Claims 1-6) and a "crosswise extending member" (Claims 7, 9-10, 12-13 and 15) so as to cure the Examiner's new matter objection.

Further and favorable consideration of this reply is respectfully solicited.

Respectfully submitted,

David G. Boutell

DGB/kc

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Encl: SECOND SUPPLEMENTAL REISSUE APPLICATION DECLARATION BY INVENTOR

136.10/11

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SECOND SUPPLEMENTAL REISSUE APPLICATION
DECLARATION BY INVENTOR

I hereby declare that: My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 7 540 047 granted on June 2, 2009, and for which a reissue patent is sought on the invention entitled AMBULANCE COT WITH PINCH SAFETY FEATURE, the application of which was filed on May 9, 2011 as reissue application no. 13/068,358 and is being amended concurrently herewith. I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37 CFR 1.56.

I do not claim foreign priority benefits under Title 35 USC 119 of any foreign application(s) for patent or inventor's certificate.

I verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of patentee claiming less than he had a right to claim in the patent.

This reissue is a broadening reissue and the nature of the broadening relates to the language of Reissue Claim 7 which provides a scope that is intermediate the scope of Original Claim 1 and Patent Claim 1 due in part to Reissue Claim 7 not reciting the crosswise members interconnecting the side rails on the base frame and the litter frame and, instead, reciting the overlooked feature of the base frame and the litter frame having widths that are recited as being greater than the X-frame width to cause the first and second mounts to engage the first and second members on the base frame and the litter frame, respectively somewhere between the side extremities of the base frame and the litter frame but not necessarily crosswise members that interconnect the side rails on the base frame and the litter frame as specifically recited in Patent Claim 1.

Another broadening is present in Reissue Claim 10. The language of Reissue Claim 10 claims an overlooked feature of the invention to provide a scope that is intermediate the scope of Original Claim 4 and Patent Claim 3 due in part to Reissue Claim 10 not reciting at least one crosswise member interconnecting the side rails on the litter frame and, instead, reciting the overlooked feature of the litter frame having a width that is greater than the X-frame width to cause the first mount to engage the at least one member on the litter frame somewhere between the side extremities of the litter frame but not necessarily a crosswise member interconnecting the side rails of the litter frame as specifically recited in Patent Claim 3.

Another broadening is present in Reissue Claim 13. The language of Reissue Claim 13 claims an overlooked feature of the invention provide a scope that is intermediate the scope of Original Claim 7 and Patent Claim 5 due in part to Reissue Claim 13 not reciting at least one crosswise member interconnecting the side rails on the base frame and, instead, reciting the overlooked base frame having a width that is recited as being greater than the X-frame width to cause the first mount to engage the at least one member on the base frame somewhere between the side extremities of the base frame but not necessarily a crosswise member interconnecting the side rails on the base frame as specifically recited in Patent Claim 5.

I additionally verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of other errors.

Specifically, Patent Claims 1, 3 and 5 are defective because they are not enabled. More specifically, the specification describes an ambulance cot 10 comprising a base frame 11, a litter frame 17 and an X-frame support mechanism 18 including at least pair of frame members 19 and 21 pivotally secured to each other proximate the mid-length portions by an axle 24. The frame members 19 and 21 each have opposite ends secured respectively to one of the base frame 11 and the litter frame 17 (Col. 4, lines 8-54). A first mount 226 is oriented between the mid-length of the frame members and the base frame 11. The first mount 226 is configured to move into and out of engagement with the litter frame 17. A second mount 227 is oriented between the mid-length of the frame members and the litter frame 17. The second mount 227 is configured to move into and out of engagement with the base frame 11. The base frame 11 has side rails 12 and at least one crosswise member 13 interconnecting the side rails 12. The litter frame 11 has side

rails 66 and at least one crosswise member interconnecting the side rails 66 (Col. 19, lines 38-44).

Patent Claim 1 Defect:

The defect in Patent Claim 1 is that it is recited that at least one of the pair of frame members 19 and 21 have a "first mount" 226 oriented between the mid-length thereof and the base frame 11 and that at least one of the frame members 19 and 21 have a "second mount" 227 oriented between the mid-length thereof and the litter frame 17. Toward the end of the third paragraph of Patent Claim 1 it is recited that the first mount 226 and the second mount 227 are configured to "respectively engage" the base frame 11 and the litter frame 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 226 being configured to engage the base frame 11 nor does it provide an enablement for the second mount 227 being configured to engage the litter frame 17.

The amendment to Patent Claim 1 is intended to remedy the defect by reciting in Reissue Claim 1 that the first and second mounts are configured to "respectively engage" the "litter frame" 17 and the "base frame" 11.

Patent Claim 3 Defect:

Patent Claim 3 recites that the "first mount" 226 is oriented between the mid-length of the frame members 19 and 21 and the base frame 11. The defect in Patent Claim 3 occurs toward the end of the third paragraph of Patent Claim 3 wherein it is recited that the first mount 226 is configured to "respectively engage" the "base frame" 11 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 226

being configured to engage the base frame 11. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 3 is intended to remedy the defect in Patent Claim 3 by reciting that the first mount 226 is configured to "engage" the "litter frame" 17.

Patent Claim 5 Defect:

Patent Claim 5 recites that the "first mount" (here it is mount 227) is oriented between the mid-length of the frame members 19 and 21 and the litter frame 17. The defect in Patent Claim 5 occurs toward the end of the third paragraph of Claim 5 wherein it is recited that the first mount 227 is configured to "respectively engage" the "litter frame" 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 227 being configured to engage the litter frame 17. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 5 is intended to remedy the defect in Patent Claim 5 by reciting that the first mount 227 is configured to "engage" the "base frame" 11.

All errors being corrected in the present reissue application up to the time of filing of this declaration arose without any deceptive intention on the part of the applicant.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may

jeopardize the validity of the application or any patent issued thereon, or any patent to which this declaration is directed.

Sole Inventor's Signature Clifford E Lambarth Date 8/20/12

Full name of sole inventor: Clifford E. Lambarth
Residence: Portage, Michigan
Citizenship: United States
Post Office Address: 10801 Cora Drive, Portage, MI 49002

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 13670147 |
| **Application Number:** | 13068358 |
| **International Application Number:** | |
| **Confirmation Number:** | 6260 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Correspondence Address:** | FLYNN, THIEL, BOUTELL & TANIS, P.C.<br>-<br>2026 RAMBLING ROAD<br>-<br>KALAMAZOO MI 49008-1631<br>US 2693811156<br>- |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Filer Authorized By:** | David G. Boutell |
| **Attorney Docket Number:** | 3007.P0418US |
| **Receipt Date:** | 06-SEP-2012 |
| **Filing Date:** | 09-MAY-2011 |
| **Time Stamp:** | 11:51:00 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 3007P418USAmendmentAfterFinal09062012.pdf | 794742<br>2fed91b4eabc0da69393b60137e30a3263402be3 | yes | 16 |

| Multipart Description/PDF files in .zip description | | |
|---|---|---|
| **Document Description** | **Start** | **End** |
| Amendment After Final | 1 | 1 |
| Claims | 2 | 8 |
| Applicant Arguments/Remarks Made in an Amendment | 9 | 10 |
| Supp reissue dec filed in accord with MPEP 1414.01. | 11 | 16 |

| | |
|---|---|
| **Warnings:** | |
| **Information:** | |
| **Total Files Size (in bytes):** | 794742 |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 13/068,358 | 05/09/2011 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY ☐ FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| | | | TOTAL | | | TOTAL | |

* If the difference in column 1 is less than zero, enter "0" in column 2.

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 09/06/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 12 | Minus | ** 20 | = 0 | X $ = | | OR | X $60= | 0 |
| | Independent (37 CFR 1.16(h)) | * 6 | Minus | ***6 | = 0 | X $ = | | OR | X $250= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/DANTE SMITH/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 07/02/2012

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 07/02/2012 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 13/068,358 | LAMBARTH, CLIFFORD E. | |
| | Examiner | Art Unit | |
| | Michael Trettel | 3673 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *06 June 2012*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *1-7,9,10,12,13 and 15* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-7,10,12,13,15* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Specification*

The amendment filed June 6, 2012 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the limitation added to claim 7 stating that there is at least one first member and at least one second member on the side rails of the base frame, where the first and second mount earlier specified in the claim rest upon the first and second members on the side rails of the base frame when the litter frame is proximate the base frame. Similarly, there is no support in the original disclosure for the limitation added to claim 10 stating that there is at least one member on one of the side rails of the litter frame which is oriented to be in the path the first mount such that the first mount engages and rests the at least one member when the litter and base frame are proximate one another. Finally, there is no support in the original disclosure for the limitation added to claim 13 stating that there is at least one member on one of the side rails of the base frame which is oriented in to be the path the first mount such that the first mount engages and rests the at least one member when the litter and base frame are proximate one another.

The disclosure as originally filed states the following concerning the structure of the first and second mounts and how they interact with the litter and base frame (column 19, lines 39-44):

> When the litter 16 is lowered to the position illustrated in FIG. 3, mounts 226 (FIG. 1) will operatively engage a cross rail provided on the underside of the litter 16 and additional mounts

227 will rest on the cross rail 13 on the base. The mounts 226 and 227 are oriented so that they are not readily accessible by attendants in the region of the ambulance cot and, therefore, pinching issues are avoided.

There is no disclosure of any type of member on the side rails of either the litter or base frame that can engage the first and second mounts when the base and litter frames are adjacent to one another. The disclosure clearly states that the mounts engage cross rails that extend between the side rails of the litter and base frames. This differs from a member on the side frames, since this implies that the mounts can be co-linear with and/or rest directly upon the side members of the base and litter frames.

Applicant is required to cancel the new matter in the reply to this Office Action.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 7, 9, 10, 12, 13, and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The is a new matter rejection based upon the objection to the specification set forth above.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 10 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 states that the first mount rests upon the one member that is on one of the side rails of the litter frame, which is impossible since the litter frame is oriented above the first mount. The first mount is defined as being attached to one of the pair of frame members that for the X-frame support mechanism, which in turn supports the litter frame from below. It then follows that the litter frame drops down onto the X-frame support mechanism, and as such the one member would rest upon the first mount, and not the fashion set forth in the claim.

***Reissue Applications***

The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following:

The oath or declaration must state that *"all errors being corrected in the reissue application up to the time of the filing of the oath or declaration arose without any deceptive intention on the part of the applicant"* (37 CFR 1.175(a)(2)) or language equivalent thereto.

The oath or declaration must state that the person signing acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56 (a).

As presently written in the first paragraph of the declaration it improperly refers to "material to examination".

It is suggested that the applicant use form PTO/SB/51 as the basis for the declaration. Many of the common errors found in reissue application can be avoided by the use of this form, which is updated on an ongoing basis. See MPEP 1414 for a copy of this form.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

The reissue oath/declaration filed with this application is defective because the error which is relied upon to support the reissue application is not an error upon which a reissue can be based. See 37 CFR 1.175(a)(1) and MPEP § 1414.

Specifically, the applicant is relying upon new matter as forming a basis for part of errors relied upon for reissue. Since the original disclosure does not provide support for this subject matter it cannot be considered to be an error that can be corrected by reissue.

Claims 1-7, 9, 10, 12, 13, and 15 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

Applicant is notified that any subsequent amendment to the specification and/or claims must comply with 37 CFR 1.173(b). In addition, when any substantive amendment is filed in the reissue application, which amendment otherwise places the reissue application in condition for allowance, a supplemental oath/declaration will be required. See MPEP § 1414.01.

The amendment filed June 6, 2012 proposes amendments to 1, 3, and 5 that do not comply with 37 CFR 1.173(b) and (d), which sets forth the manner of making amendments in

reissue applications. A supplemental paper correctly amending the reissue application is required. Specifically, the added subject matter must be underlined and the deleted subject matter must be enclosed in brackets.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-7, 9, 10, 12, 13, and 15 have been considered but are moot because the arguments do not apply to any of the grounds of rejection being used in the current rejection.

The applicant's arguments with respect to the recapture rejection have been considered and are largely agreed with. Since this arguments are also coupled with the inclusion of new matter in claims 7, 10, and 13 they fail to overcome the rejection in full, since a new grounds of rejection has been applied to the claims.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Trettel whose telephone number is (571)272-7052. The examiner can normally be reached on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pete Cuomo can be reached on (571) 272-6856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Trettel
Primary Examiner
Art Unit 3673

/Michael Trettel/
Primary Examiner, Art Unit 3673

| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ✓ | Rejected | - | Cancelled | N | Non-Elected | A | Appeal |
| = | Allowed | ÷ | Restricted | I | Interference | O | Objected |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Final | Original | 02/17/2012 | 06/29/2012 | | | | | | | |
| | 1 | ✓ | ✓ | | | | | | | |
| | 2 | ✓ | ✓ | | | | | | | |
| | 3 | ✓ | ✓ | | | | | | | |
| | 4 | ✓ | ✓ | | | | | | | |
| | 5 | ✓ | ✓ | | | | | | | |
| | 6 | ✓ | ✓ | | | | | | | |
| | 7 | ✓ | ✓ | | | | | | | |
| | 8 | ✓ | - | | | | | | | |
| | 9 | ✓ | ✓ | | | | | | | |
| | 10 | ✓ | ✓ | | | | | | | |
| | 11 | ✓ | - | | | | | | | |
| | 12 | ✓ | ✓ | | | | | | | |
| | 13 | ✓ | ✓ | | | | | | | |
| | 14 | ✓ | - | | | | | | | |
| | 15 | ✓ | ✓ | | | | | | | |

## EAST Search History

### EAST Search History (Prior Art)

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 775 | (5/611,296/20).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L2 | 441 | (254/2R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L3 | 357 | (254/8R,9R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L4 | 1242 | (5/11,86.1).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L5 | 313 | (108/145,147.2,147.22).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L6 | 997 | (108/144.11,147).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L7 | 476 | (5/118).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |
| L8 | 4309 | L1 or L2 or L3 or L4 or L5 or L6 or L7 | US-PGPUB; USPAT; EPO | OR | OFF | 2012/06/29 15:52 |

### EAST Search History (Interference)

<This search history is empty>

**6/29/2012 3:55:07 PM**
**C:\Users\mtrettel\Documents\EAST\Workspaces\13068358.wsp**

| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | Examiner | Art Unit |
| | MICHAEL TRETTEL | 3673 |

## SEARCHED

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| 5 | 11, 611, 118, 86.1 | 2/17/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 2/17/2012 | MT |
| 254 | 2R, 8R, 9R | 2/17/2012 | MT |

## SEARCH NOTES

| Search Notes | Date | Examiner |
|---|---|---|
| Search updated. | 6/29/2012 | MT |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
|---|---|---|---|
| | | | |

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

June 6, 2012

Applicant: Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION

Sir:

In response to the Office Action dated March 9, 2012, please amend the above-identified application as follows:

(Please see following pages.)

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame; and

wherein said litter [base] frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first

crosswise member, and wherein said base [litter] frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base [litter] frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. The ambulance cot according to claim 1, wherein said first and second mounts each engage and rest upon respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. (Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter [base] frame, said first mount being configured to [respectively] engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base

frame so that said first mount engages and rests upon said at least one crosswise member.

4. The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said base frame.

5. (Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base [litter] frame, said first mount being configured to [respectively] engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

6. The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said litter frame.

7. (Amended) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said litter frame and said base frame in response to said litter frame becoming proximate said base frame; and

said litter frame having longitudinally extending side rails and at least one first member on at least one of said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first member, and said base frame

having longitudinally extending side rails and at least one second member on at least one of said side rails of said base frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second member.

Claim 8 (Cancelled).

9. (Amended) The ambulance cot according to claim 7, wherein said first and second mounts each engage and rest upon respective ones of said at least one first and second members and between the respective said side rails of said litter frame and said base frame.

10. (Amended) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to engage said litter frame in

response to said litter frame becoming proximate said base frame; and

said litter frame having longitudinally extending side rails and at least one member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one member.

Claim 11 (Cancelled).

12. (Amended) The ambulance cot according to claim 10, wherein said first mount engages and rests upon said at least one member and between the respective said side rails of said base frame.

13. (Amended) An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to engage said base frame in

response to said litter frame becoming proximate said base frame; and

said base frame having longitudinally extending side rails and at least one member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one member.

Claim 14 (Cancelled).

15. (Amended) The ambulance cot according to claim 13, wherein said first mount engages and rests upon said at least one member and between the respective said side rails of said litter frame.

## REMARKS

STATUS OF PATENT CLAIMS AND NEW CLAIMS

Amended Reissue Claims 1-6 have not been changed by this amendment. New Claims 7, 9-10, 12-13 and 15 have been changed by this amendment and New Claims 8, 11 and 14 have been cancelled. Accordingly Reissue Claims 1-7, 9-10, 12-13 and 15 remain in this reissue application.

DEFECT IN PATENT CLAIMS 1, 3 AND 5:

Patent Claims 1, 3 and 5 are defective because they are not enabled. This error in the patent was made without any deceptive intention. More specifically, the specification describes an ambulance cot 10 comprising a base frame 11, a litter frame 17 and an X-frame support mechanism 18 including at least pair of frame members 19 and 21 pivotally secured to each other proximate the mid-length portions by an axle 24. The frame members 19 and 21 each have opposite ends secured respectively to one of the base frame 11 and the litter frame 17 (Col. 4, lines 8-54). A first mount 226 is oriented between the mid-length of the frame members and the base frame 11. The first mount 226 is configured to move into and out of engagement with the litter frame 17. A second mount 227 is oriented between the mid-length of the frame members and the litter frame 17. The second mount 227 is configured to move into and out of engagement with the base frame 11. The base frame 11 has side rails 12 and at least one crosswise member 13 interconnecting the side rails 12. The litter frame 11 has side rails 66 and at least one crosswise member interconnecting the side rails 66 (Col. 19, lines 38-44).

Patent Claim 1 Defect:

The defect in Patent Claim 1 is that it is recited that at least one of the pair of frame members 19 and 21 have a "first mount" 226 oriented between the mid-length thereof and the base frame 11 and that at least one of the frame members 19 and 21 have a "second mount" 227 oriented between the mid-length thereof and the litter frame 17. Toward the end of the third paragraph of Patent Claim 1 it is recited that the first mount 226 and the second mount 227 are configured to "respectively engage" the base frame 11 and the litter frame 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 226 being configured to engage the base frame 11 nor does it provide an enablement for the second mount 227 being configured to engage the litter frame 17.

The amendment to Patent Claim 1 is intended to remedy the defect in Claim 1 by reciting that the first and second mounts are configured to respectively engage the "litter frame" 17 and the "base frame" 11.

Patent Claim 3 Defect:

Patent Claim 3 recites that the "first mount" 226 is oriented between the mid-length of the frame members 19 and 21 and the base frame 11. The defect in Patent Claim 3 occurs toward the end of the third paragraph of Patent Claim 3 wherein it is recited that the first mount 226 is configured to "respectively engage" the "base frame" 11 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 226

being configured to engage the base frame 11. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 3 is intended to remedy the defect in Patent Claim 3 by reciting that the first mount 226 is configured to "engage" the "litter frame" 17.

Patent Claim 5 Defect:

Patent Claim 5 recites that the "first mount" (here it is mount 227) is oriented between the mid-length of the frame members 19 and 21 and the litter frame 17. The defect in Patent Claim 5 occurs toward the end of the third paragraph of Claim 5 wherein it is recited that the first mount 227 is configured to "respectively engage" the "litter frame" 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 227 being configured to engage the litter frame 17. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 5 is intended to remedy the defect in Patent Claim 5 by reciting that the first mount 227 is configured to "engage" the "base frame" 11.

REISSUE CLAIMS 7, 9-10, 12-13 AND 15

The original patent is inoperative by reason of the patentee claiming less than he had the right to claim in the patent since overlooked features related to the significance of the widths of the base frame, litter frame and the X-frame are narrower that the Original Claims but broader than the Patent Claims. Since Reissue Claims 7, 9-10, 12-13 and 15 are of a

scope that is intermediate of the scope of the Original Claims, Reissue Claims 7, 9-10, 12-13 and 15 are without any recapture issue. In re Youman, Fed Cir, No. 2011-1136, 5/8/12 specifically held that the recapture rule requires comparison to the original claim, not the patented claim, to determine whether the reissue claim "materially narrows" scope. Patentee respectfully submits that Reissue Claims 7, 10 and 13 each modify the limitation added to Original Claims 1, 4 and 7, respectively, such that they are broader than the Patent Claim 1, 3 and 5 yet still materially narrower relative to Original Claims 1, 4 and 7, respectively.

The following commentary is intended to explain in more detail the lack of a recapture issue in Reissue Claims 7, 9-10, 12-13 and 15. The Examiner is respectfully directed to MPEP Section 1412.02 and the discussion re "The Third Step" and the second analysis which states:

> "If, however, the reissue claim(s) are really claiming additional inventions/embodiments/species not originally claimed (i.e., overlooked aspects of the disclosed invention), then recapture will not be present.

REISSUE CLAIM 7:

Reissue Claim 7 has the following elements (the below non-underlined phrases are presented in Original Claim 1 and the underlined phrases represent a material narrowing addition to distinguish Reissue Claim 7 from original Claim 1):

A. a base frame having a first lateral width;

B. a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end;

C. an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame,

D. said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof,

E. said frame members each having opposite ends respectively secured to one of said base frame and said litter frame,

F. said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame;

G. said litter frame having longitudinally extending side rails and at least one first member on at least one of said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first member, and said base frame having longitudinally extending side rails and at least one second member on at least one of said side rails of said base frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second member.

Since current Reissue Claim 7 includes all of the A-F elements of Original Claim 1, and since current Reissue Claim 7 claims elements A-G, namely:

A. adds material narrowing limitation re first width;

B. adds material narrowing limitation re second width, the provision of a manually engageable handle adjacent one end and configured to facilitate a manual lifting of the one end and the provision of load wheels at the opposite end of the cot;

C. adds material narrowing limitation re third width less than first and second widths;

D. unchanged from Original Claim 1;

E. unchanged from Original Claim 1;

F. unchanged from Original Claim 1 (except for a correction to the defective language in Original Claim 1);

G. adds material narrowing limitation re said litter frame having longitudinally extending side rails and at least one first member on at least one of said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first member, and said base frame having longitudinally extending side rails and at least one second member on at least one of said side rails of said base frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second member

a recapture issue is not present in Reissue Claim 7 because the above underlined language of Reissue Claim 7 provides a scope that is intermediate the scope of Original Claim 1 and Patent Claim 1 due in part to Reissue Claim 1 not reciting the

crosswise members interconnecting the side rails on the base frame and the litter frame and, instead, reciting the overlooked feature of the base frame and the litter frame having widths that are recited as being greater than the X-frame width to cause the first and second mounts to engage the first and second members on the base frame and the litter frame, respectively somewhere between the side extremities of the base frame and the litter frame but not necessarily crosswise members that interconnect the side rails on the base frame and the litter frame as specifically recited in Patent Claim 1.

REISSUE CLAIMS 8 AND 9:

Reissue Claim 8 has been cancelled and Reissue Claim 9 has been amended to change the dependency to Reissue Claim 7 and remove the word "crosswise" to be consistent with Reissue Claim 7 from which it depends.

REISSUE CLAIM 10:

Reissue Claim 10 has the following elements (the below non-underlined phrases are presented in Original Claim 4 and the underlined phrases represent an addition to distinguish Reissue Claim 10 from Original Claim 4):

A. a base frame having a first lateral width;

B. a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end;

C. an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame

and being configured to support said litter frame in one of a plurality of positions relative to said base frame,

D. said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof,

E. said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame,

F. said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said [base] litter frame, said first mount being configured to [respectively] engage said [base] litter frame and said [litter] base frame in response to said litter frame becoming proximate said base frame;

G. said litter frame having longitudinally extending side rails and at least one member on at least one said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one member.

Since Reissue Claim 10 includes all of the A-F elements of Original Claim 4, and since current Reissue Claim 10 claims elements A-G, namely:

A. adds material narrowing limitation re first width;

B. adds material narrowing limitation re second width, the provision of a manually engageable handle adjacent one end and configured to facilitate a manual lifting of the one end and the provision of load wheels at the opposite end of the cot;

C. adds material narrowing limitation re third width less than first and second widths;

D. unchanged from Original Claim 4;

E. unchanged from Original Claim 4;

F. unchanged from Original Claim 4 (except for a correction to the defective language in Original Claim 1);

G. adds material narrowing limitation re said litter frame having longitudinally extending side rails and at least one member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one member

a recapture issue is not present in current Reissue Claim 10 because the above underlined language of Reissue Claim 10 claims an overlooked feature of the invention to provide a scope that is intermediate the scope of Original Claim 4 and Patent Claim 3 due in part to Reissue Claim 10 not reciting at least one crosswise member interconnecting the side rails on the litter frame and, instead, reciting the overlooked feature of the litter frame having a width that is greater than the X-frame width to cause the first mount to engage the at least one member on the litter frame somewhere between the side extremities of the litter frame but not necessarily a crosswise member interconnecting the side rails of the litter frame as specifically recited in Patent Claim 3.

REISSUE CLAIMS 11 AND 12:

Reissue Claim 11 has been cancelled and Reissue Claim 12 has been amended to change the dependency to Reissue Claim 10 and remove the word "crosswise" to be consistent with Reissue Claim 10 from it depends.

AMENDED REISSUE CLAIM 13:

Amended Reissue Claim 13 currently has the following elements (the below non-underlined phrases are presented in Original Claim 7 and the underlined phrases represent an addition to distinguish Reissue Claim 13 from Original Claim 7):

A. a base frame having a first lateral width;

B. a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end;

C. an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame,

D. said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof,

E. said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame,

F. said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to [respectively] engage said [litter] base frame in response to said litter frame becoming proximate said base frame,

G. said base frame having longitudinally extending side rails and at least one member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one member.

Since Reissue Claim 13 includes all of the A-F elements of Original Claim 7, and since in current Reissue Claim 13 claims elements A-G, namely:

A. adds material narrowing limitation re first width;

B. adds material narrowing limitation re second width, the provision of a manually engageable handle adjacent one end and configured to facilitate a manual lifting of the one end and the provision of load wheels at the opposite end of the cot;

C. adds material narrowing limitation re third width less than first and second widths;

D. unchanged from Original Claim 7;

E. unchanged from Original Claim 7;

F. unchanged from Original Claim 7 (except for a correction to the defective language in Original Claim 7);

G. adds material narrowing limitation re said base frame having longitudinally extending side rails and at least one member on at least one of said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one member

a recapture issue is not present in Reissue Claim 13 because the above underlined language of current Reissue Claim 13 is a material narrowing of Original Claim 7 to provide a scope that is intermediate the scope of Original Claim 7 and Patent Claim 5 due in part to Reissue Claim 13 not reciting at least one crosswise member interconnecting the side rails on the base frame and, instead, reciting the overlooked base frame having a width that is recited as being greater than the X-frame width to cause the first mount to engage the at least one member on the

base frame somewhere between the side extremities of the base frame but not necessarily a crosswise member interconnecting the side rails on the base frame as specifically recited in Patent Claim 5.

REISSUE CLAIMS 14 AND 15:

Reissue Claim 14 has been cancelled and Reissue Claim 15 has been amended to change the dependency to Reissue Claim 13 and to remove the word "crosswise" in order to be consistent with Claim 13 from which it depends.

To summarize the foregoing commentary, enclosed is a marked-up photocopy of the Chart appearing in Section 1412.02 of the MPEP at subsection "VI FLOWCHART". A darkened line has been drawn on this chart to represent the analysis "path" employed in arriving at the conclusion that no recapture issue is present in Reissue Claims 7, 9-10, 12-13 and 15.

REISSUE CLAIMS 7-15 ARE PATENTABLY DISTINGUISHABLE FROM ALM U.S. PATENT NO. 3,174,722:

It is respectfully submitted that the current Reissue Claims 7-15 are patentably distinguishable from the teachings in Alm. Alm teaches the provision of an base frame structure 16 and a load-engaging platform 11 interconnected by a fluid pressure operated extensible support formation 12 consisting on an X-frame structure for elevating the load-engaging platform 11. There is no teaching in Alm of side rails 32 of the base frame structure 16 or the side rails 61 of the load-engaging platform 11 having at least one member thereon being oriented in a path of movement of a first mount on the X-frame structure as the load-engaging platform becomes proximate the base frame structure so that the first mount engages and rests upon the at

least one member provided on the side rails 32 and/or 61. Instead, Alm teaches the resting of each of the X-frame members in a respective channel structure 26 and 27 provided on an opposite X-frame member. There is no structure in Alm corresponding to a "mount" on the X-frame structures recited in Reissue Claims 7-15 capable of resting upon the member provided on the side rails of the base frame or the load-engaging platform somewhere between the respective widths of the base frame and the load-engaging platform. Since the crosswise extending structures 17 and 18 each provide a support for ground engaging wheels 59, Alm teaches away from the concept of having the structures 17 and 18 resting on some substructure corresponding to the members recited in Reissue Claims 7-15. It is therefore respectfully submitted that Reissue Claims 7-15 are patentably distinguishable from Alm as required by the provisions of Title 35 USC 102 and 103.

SUPPLEMENTAL REISSUE DECLARATION:

A filing of a Supplemental Reissue Declaration by the Inventor is filed concurrently herewith.

Further and favorable consideration of the reissue application is respectfully solicited.

Respectfully submitted,

DGB/kc

David G. Boutell

FLYNN, THIEL, BOUTELL & TANIS, P.C.
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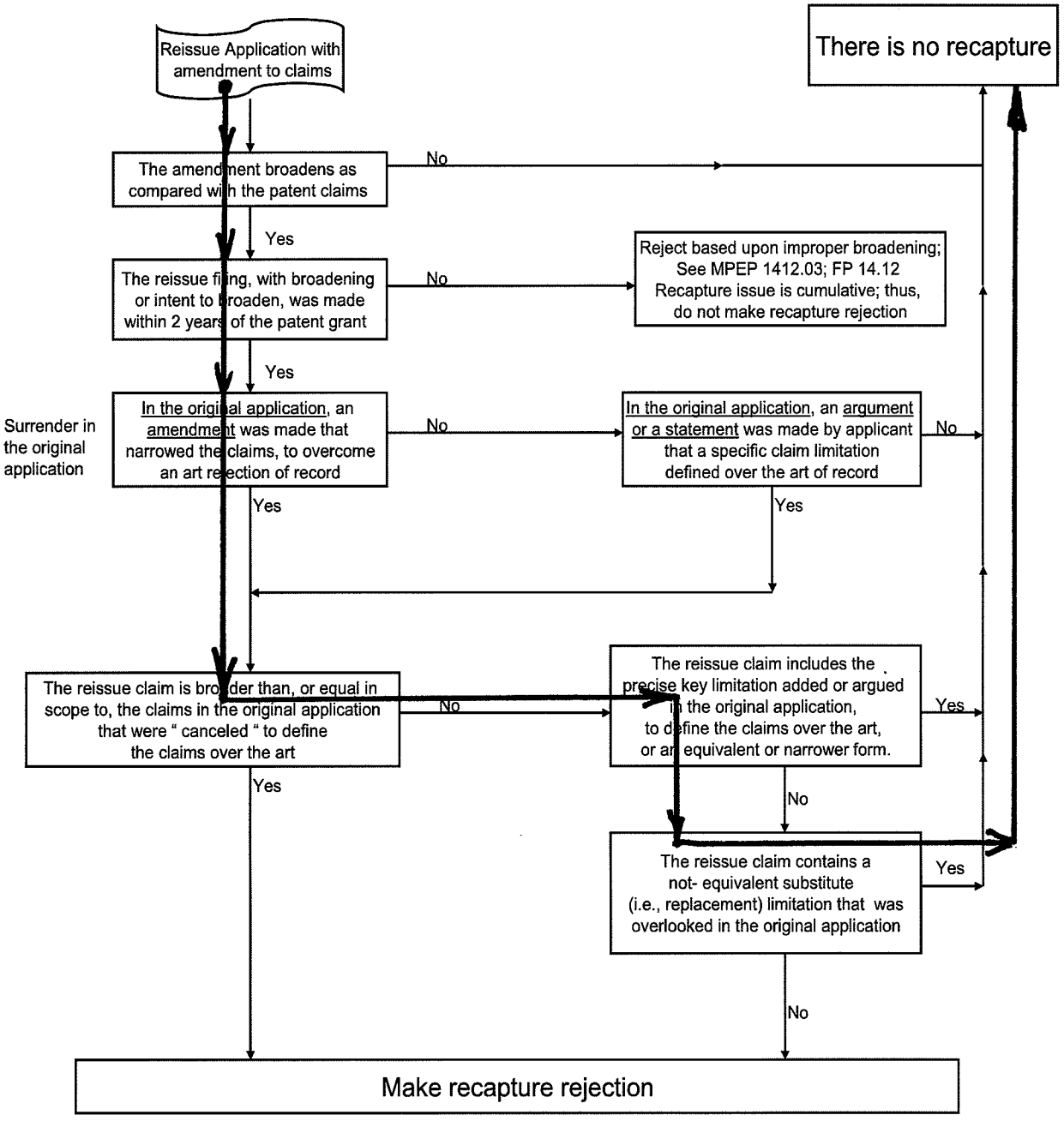
Terryence F. Chapman Reg. No. 32 549
Liane L. Churney Reg. No. 40 694
Brian R. Tumm Reg. No. 36 328
Eugene J. Rath III Reg. No. 42 094
Marcus P. Dolce Reg. No. 46 073
Dale H. Thiel Reg. No. 24 323
David G. Boutell Reg. No. 25 072
Sidney B. Williams, Jr. Reg. No. 24 949

Encl: FLOWCHART
SUPPLEMENTAL REISSUE APPLICATION DECLARATION BY INVENTOR

136.10/11

>

# Reissue Recapture - Determining its presence or absence




<

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

Applicant: Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: 13/068 358 Group: 3673

Confirmation No.: 6260

Filed: May 9, 2011 Examiner: Trettel

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

SUPPLEMENTAL REISSUE APPLICATION
DECLARATION BY INVENTOR

I hereby declare that: My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 7 540 047 granted on June 2, 2009, and for which a reissue patent is sought on the invention entitled AMBULANCE COT WITH PINCH SAFETY FEATURE, the application of which was filed on May 9, 2011 as reissue application no. 13/068,358 and as amended as of the date of filing this Declaration. I hereby state that I have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment referred to above. I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

{00215883.DOCX}

I do not claim foreign priority benefits under Title 35, United States Code, Section 119, of any foreign application(s) for patent or inventor's certificate.

I verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of patentee claiming less than he had a right to claim in the patent.

This reissue is a broadening reissue and the nature of the broadening relates to the language of Reissue Claim 7 which provides a scope that is intermediate the scope of Original Claim 1 and Patent Claim 1 due in part to Reissue Claim 7 not reciting the crosswise members interconnecting the side rails on the base frame and the litter frame and, instead, reciting the overlooked feature of the base frame and the litter frame having widths that are recited as being greater than the X-frame width to cause the first and second mounts to engage the first and second members on the base frame and the litter frame, respectively somewhere between the side extremities of the base frame and the litter frame but not necessarily crosswise members that interconnect the side rails on the base frame and the litter frame as specifically recited in Patent Claim 1.

Another broadening is present in Reissue Claim 10. The language of Reissue Claim 10 claims an overlooked feature of the invention to provide a scope that is intermediate the scope of Original Claim 4 and Patent Claim 3 due in part to Reissue Claim 10 not reciting at least one crosswise member interconnecting the side rails on the litter frame and, instead, reciting the overlooked feature of the litter frame having a width that is greater than the X-frame width to cause the first mount to engage the at least one member on the litter frame somewhere between the side extremities of the litter frame but not

necessarily a crosswise member interconnecting the side rails of the litter frame as specifically recited in Patent Claim 3.

Another broadening is present in Reissue Claim 13. The language of Reissue Claim 13 claims an overlooked feature of the invention provide a scope that is intermediate the scope of Original Claim 7 and Patent Claim 5 due in part to Reissue Claim 13 not reciting at least one crosswise member interconnecting the side rails on the base frame and, instead, reciting the overlooked base frame having a width that is recited as being greater than the X-frame width to cause the first mount to engage the at least one member on the base frame somewhere between the side extremities of the base frame but not necessarily a crosswise member interconnecting the side rails on the base frame as specifically recited in Patent Claim 5.

I additionally verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of other errors.

Specifically, Patent Claims 1, 3 and 5 are defective because they are not enabled. More specifically, the specification describes an ambulance cot 10 comprising a base frame 11, a litter frame 17 and an X-frame support mechanism 18 including at least pair of frame members 19 and 21 pivotally secured to each other proximate the mid-length portions by an axle 24. The frame members 19 and 21 each have opposite ends secured respectively to one of the base frame 11 and the litter frame 17 (Col. 4, lines 8-54). A first mount 226 is oriented between the mid-length of the frame members and the base frame 11. The first mount 226 is configured to move into and out of engagement with the litter frame 17. A second mount 227 is oriented between the mid-length of the frame members and the litter frame 17. The second mount 227 is configured to move

into and out of engagement with the base frame 11. The base frame 11 has side rails 12 and at least one crosswise member 13 interconnecting the side rails 12. The litter frame 11 has side rails 66 and at least one crosswise member interconnecting the side rails 66 (Col. 19, lines 38-44).

Patent Claim 1 Defect:

The defect in Patent Claim 1 is that it is recited that at least one of the pair of frame members 19 and 21 have a "first mount" 226 oriented between the mid-length thereof and the base frame 11 and that at least one of the frame members 19 and 21 have a "second mount" 227 oriented between the mid-length thereof and the litter frame 17. Toward the end of the third paragraph of Patent Claim 1 it is recited that the first mount 226 and the second mount 227 are configured to "respectively engage" the base frame 11 and the litter frame 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 226 being configured to engage the base frame 11 nor does it provide an enablement for the second mount 227 being configured to engage the litter frame 17.

The amendment to Patent Claim 1 is intended to remedy the defect by reciting in Reissue Claim 1 that the first and second mounts are configured to "respectively engage" the "litter frame" 17 and the "base frame" 11.

Patent Claim 3 Defect:

Patent Claim 3 recites that the "first mount" 226 is oriented between the mid-length of the frame members 19 and 21 and the base frame 11. The defect in Patent Claim 3 occurs toward the end of the third paragraph of Patent Claim 3 wherein it is recited that the first mount 226 is configured to

"respectively engage" the "base frame" 11 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 226 being configured to engage the base frame 11. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 3 is intended to remedy the defect in Patent Claim 3 by reciting that the first mount 226 is configured to "engage" the "litter frame" 17.

Patent Claim 5 Defect:

Patent Claim 5 recites that the "first mount" (here it is mount 227) is oriented between the mid-length of the frame members 19 and 21 and the litter frame 17. The defect in Patent Claim 5 occurs toward the end of the third paragraph of Claim 5 wherein it is recited that the first mount 227 is configured to "respectively engage" the "litter frame" 17 in response to the litter frame becoming proximate the base frame. The specification referenced in the subject patent at Col. 19, lines 38-44 does not provide an enablement for the first mount 227 being configured to engage the litter frame 17. Furthermore, the word "respectively" is inappropriate when only one mount is being recited.

The amendment to Patent Claim 5 is intended to remedy the defect in Patent Claim 5 by reciting that the first mount 227 is configured to "engage" the "base frame" 11.

All errors in the present reissue application up to the time of signing of this declaration, or errors which are being corrected by a paper filed concurrently with this declaration, which correction of errors I have reviewed, arose without any deceptive intention on the part or the applicant.

SUPPLEMENTAL REISSUE APPLICATION
DECLARATION BY INVENTOR - Serial No. 13/068 358 - Page 6

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon, or any patent to which this declaration is directed.

Sole
Inventor's
Signature _____ Date 5-30-12

Full name of sole inventor: Clifford E. Lambarth
Residence: Portage, Michigan
Citizenship: United States
Post Office Address: 10801 Cora Drive, Portage, MI 49002

# Electronic Acknowledgement Receipt

| | |
|---|---|
| **EFS ID:** | 12944906 |
| **Application Number:** | 13068358 |
| **International Application Number:** | |
| **Confirmation Number:** | 6260 |
| **Title of Invention:** | AMBULANCE COT WITH PINCH SAFETY FEATURE |
| **First Named Inventor/Applicant Name:** | Clifford E. Lambarth |
| **Correspondence Address:** | FLYNN, THIEL, BOUTELL & TANIS, P.C.<br>-<br>2026 RAMBLING ROAD<br>-<br>KALAMAZOO MI 49008-1631<br>US 2693811156<br>- |
| **Filer:** | David G. Boutell/Kathleen Cross |
| **Filer Authorized By:** | David G. Boutell |
| **Attorney Docket Number:** | 3007.P0418US |
| **Receipt Date:** | 06-JUN-2012 |
| **Filing Date:** | 09-MAY-2011 |
| **Time Stamp:** | 11:33:39 |
| **Application Type:** | Utility under 35 USC 111(a) |

## Payment information:

| | |
|---|---|
| Submitted with Payment | no |

## File Listing:

EXHIBIT 1004 PAGE0160

| Document Number | Document Description | File Name | File Size(Bytes)/ Message Digest | Multi Part /.zip | Pages (if appl.) |
|---|---|---|---|---|---|
| 1 | | 3007P0418USResponse06062012.pdf | 1100739<br>6deda4341dfbe78eec58417d2be97d4c82603d33 | yes | 23 |

| Multipart Description/PDF files in .zip description | | |
|---|---|---|
| **Document Description** | **Start** | **End** |
| Amendment/Req. Reconsideration-After Non-Final Reject | 1 | 1 |
| Claims | 2 | 8 |
| Applicant Arguments/Remarks Made in an Amendment | 9 | 22 |
| Examination support document | 23 | 23 |

**Warnings:**

**Information:**

| | | | | | |
|---|---|---|---|---|---|
| 2 | Supp reissue dec filed in accord with MPEP 1414.01. | 3007P0418USReissueDeclarationInventor06062012.pdf | 321470<br>aa373fca69cfbf8f8ee6eb7333e93d173776df7d | no | 6 |

**Warnings:**

**Information:**

| | |
|---|---|
| **Total Files Size (in bytes):** | 1422209 |

**This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.**

**New Applications Under 35 U.S.C. 111**

**If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.**

**National Stage of an International Application under 35 U.S.C. 371**

**If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.**

**New International Application Filed with the USPTO as a Receiving Office**

**If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.**

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 13/068,358 | 05/09/2011 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY ☐ RATE ($) | SMALL ENTITY FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT 06/06/2012 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * 12 | Minus | ** 20 | = 0 | X $ = | | OR | X $60= | 0 |
| Independent (37 CFR 1.16(h)) | * 6 | Minus | ***6 | = 0 | X $ = | | OR | X $250= | 0 |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | RATE ($) | ADDITIONAL FEE ($) | | RATE ($) | ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|
| Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/SUSAN FORD/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | Clifford E. Lambarth | 3007.P0418US | 6260 |

7590 03/09/2012

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

| EXAMINER | |
|---|---|
| TRETTEL, MICHAEL | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3673 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 03/09/2012 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 13/068,358 | LAMBARTH, CLIFFORD E. | |
| | Examiner | Art Unit | |
| | Michael Trettel | 3673 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09 May 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5)☒ Claim(s) *1-15* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-15* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *09 May 2011* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Reissue Applications*

The reissue oath/declaration filed with this application is defective (see 37 CFR 1.175 and MPEP § 1414) because of the following:

The oath or declaration must identify the specification to which it is directed as required by 37CFR 1.63(a)(2). Referring to the application as being "described and claimed in Letters Patent No. 7,540,047" and "in the foregoing specification" does not meet the requirement. See MPEP § 601.01(a) last para. and § 602 part VI for guidance regarding the acceptable minimums for identifying the specification in an oath or declaration.

The oath or declaration must state that the person signing has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration as required by 37 CFR 1.63(b)(2).

The oath or declaration must properly identify at least one 35 U.S.C. 251 error being relied upon as a basis for the reissue and that it is indeed an appropriate error for reissue (37 CFR 1.175(a)(1)). With respect to claims 1, 3, and 5 the applicant has not presented enough details as to what errors are being corrected by the amendments to the claims. It appears that the applicant is attempting to correct an issue with respect to 35 USC §112 and as to how these claims are supported by the language of the specification. Merely stating that the changes to the claims are meant correct how the disclosed invention reads onto the claims is insufficient to describe the error or errors. Specific changes or amendments to the claims must be identified. If new claims are presented, their differences from the original claims must be pointed out. In the present case no explanation of the differences between new claims 7-15 and the original claims has been

presented. Instead the applicant has merely recited the language of these claims, which does not meet the requirement. It is unclear exactly what error(s) these claims are meant to address or correct. See MPEP 1414.

The oath or declaration must state that *"all errors being corrected in the reissue application up to the time of the filing of the oath or declaration arose without any deceptive intention on the part of the applicant"* (37 CFR 1.175(a)(2)) or language equivalent thereto.

The oath or declaration must state that the person signing acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56 (a). As presently written in the third paragraph of the deceleration it improperly refers to "material to examination".

It is suggested that the applicant use form PTO/SB/51 as the basis for the declaration. Many of the common errors found in reissue application can be avoided by the use of this form, which is updated on an ongoing basis. See MPEP 1414 for a copy of this form.

Claims 1-15 are rejected as being based upon a defective reissue declaration under 35 U.S.C. 251 as set forth above. See 37 CFR 1.175.

The nature of the defect(s) in the declaration is set forth in the discussion above in this Office action.

Claims 7, 10, and 13 are rejected under 35 U.S.C. 251 as being an improper recapture of broadened claimed subject matter surrendered in the application for the patent upon which the present reissue is based. See *Pannu v. Storz Instruments Inc.*, 258 F.3d 1366, 59 USPQ2d 1597 (Fed. Cir. 2001); *Hester Industries, Inc.* v. *Stein, Inc.*, 142 F.3d 1472, 46 USPQ2d 1641 (Fed. Cir. 1998); *In re Clement,* 131 F.3d 1464, 45 USPQ2d 1161 (Fed. Cir. 1997)*; Ball Corp.* v.

*United States*, 729 F.2d 1429, 1436, 221 USPQ 289, 295 (Fed. Cir. 1984). A broadening aspect is present in the reissue which was not present in the application for patent. The record of the application for the patent shows that the broadening aspect (in the reissue) relates to claim subject matter that applicant previously surrendered during the prosecution of the application. Accordingly, the narrow scope of the claims in the patent was not an error within the meaning of 35 U.S.C. 251, and the broader scope of claim subject matter surrendered in the application for the patent cannot be recaptured by the filing of the present reissue application.

In the parent application U.S. Serial No. 12/002958 the applicant amended independent claims 1, 4, and 7 (renumbered as claims 1, 3, and 5 in issued U.S. Patent No. 7,540,047) by adding the subject matter of dependent claims 2, 5, and 8 respectively to the claims. This is evidence that the subject matter of claims 2, 5, and 8 was crucial to the allowance of the parent application, and that this subject matter was surrendered as a result. In the present application independent claims 7, 10, and 13 have been added, which claims correspond to the subject matter of original claims 1, 4, and 7 along with other newly added limitations. These newly added limitations do not correspond to the subject matter of original claims 2, 5, and 8 and are not of any relevance to the question of recapture. The new independent claims 7, 10, and 13 drop out the subject matter of original application claims 2, 5, and 8 which had been added to the original independent claims 1, 4, and 7 to make them allowable. By leaving out the subject matter of these dependent claims the applicant is attempting to recapture subject matter that was surrendered in order to secure an allowance of the original application claims.

Applicant is notified that any subsequent amendment to the specification and/or claims must comply with 37 CFR 1.173(b). In addition, when any substantive amendment is filed in the reissue application, which amendment otherwise places the reissue application in condition for allowance, a supplemental oath/declaration will be required. See MPEP § 1414.01.

The amendment filed May 9, 2011 proposes amendments to 1, 3, and 5 that do not comply with 37 CFR 1.173(b), which sets forth the manner of making amendments in reissue applications. A supplemental paper correctly amending the reissue application is required. Specifically, the deleted subject matter must be enclosed in brackets and not crossed out.

The amendment filed May 9, 2011 proposes new claims 7-15 that do not comply with 37 CFR 1.173(c), which sets forth the manner of making amendments in reissue applications. Specifically an explanation of the support in the disclosure of the patent for the changes being made by the inclusion of these claims must be provided.

## *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cited prior art shows the references cited by the examiner in the parent application upon which this reissue is based.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Trettel whose telephone number is (571)272-7052. The examiner can normally be reached on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pete Cuomo can be reached on (571) 272-6856. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael Trettel
Primary Examiner
Art Unit 3673

/Michael Trettel/
Primary Examiner, Art Unit 3673

| Notice of References Cited | Application/Control No. 13/068,358 | Applicant(s)/Patent Under Reexamination LAMBARTH, CLIFFORD E. | |
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

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| | Ser.No.: Unknown | Filed: Unknown |
| | Conf. No.: Unknown | Atty. Docket No:: 3007.P0418US |
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EXHIBIT 1004 PAGE0175

Express Mail Label No.: EM 573 689 505 US

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TERNO: TPR1024004R
EXHIBIT 1004 PAGE0175

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| Index of Claims | Application/Control No. | Applicant(s)/Patent Under Reexamination |
|---|---|---|
| | 13068358 | LAMBARTH, CLIFFORD E. |
| | **Examiner** | **Art Unit** |
| | MICHAEL TRETTEL | 3673 |

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☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| CLAIM | | DATE | | | | | | | | |
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| | 1 | ✓ | | | | | | | | |
| | 2 | ✓ | | | | | | | | |
| | 3 | ✓ | | | | | | | | |
| | 4 | ✓ | | | | | | | | |
| | 5 | ✓ | | | | | | | | |
| | 6 | ✓ | | | | | | | | |
| | 7 | ✓ | | | | | | | | |
| | 8 | ✓ | | | | | | | | |
| | 9 | ✓ | | | | | | | | |
| | 10 | ✓ | | | | | | | | |
| | 11 | ✓ | | | | | | | | |
| | 12 | ✓ | | | | | | | | |
| | 13 | ✓ | | | | | | | | |
| | 14 | ✓ | | | | | | | | |
| | 15 | ✓ | | | | | | | | |

## EAST Search History

## EAST Search History (Prior Art)

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EXHIBIT 1004 PAGE0180

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| S8 | 1106 | (5/11,86.1).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2008/12/05 07:10 |
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FERNO: IPR2024-00042
EXHIBIT 1004 PAGE0181

EXHIBIT 1004 PAGE0182

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| S12 | 637 | (5/611,296/20).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2009/03/10 15:34 |
| S13 | 410 | (254/2R).CCLS. | US-PGPUB; USPAT; EPO | OR | OFF | 2009/03/10 15:34 |
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| S19 | 3937 | S12 or S13 or S14 or S15 or S16 or S17 or S18 | US-PGPUB; USPAT; EPO | OR | OFF | 2009/03/10 15:36 |
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EXHIBIT 1004 PAGE0182

EXHIBIT 1004 PAGE0183

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**EAST Search History (Interference)**

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## EAST Search History (Prior Art)

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EXHIBIT 1004 PAGE0185

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**EAST Search History (Interference)**

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**2/ 14/ 2012 12:39:05 PM**
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| Search Notes | Application/Control No. | Applicant(s)/Patent Under Reexamination |
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| | 13068358 | LAMBARTH, CLIFFORD E. |
| | Examiner | Art Unit |
| | MICHAEL TRETTEL | 3673 |

## SEARCHED

| Class | Subclass | Date | Examiner |
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| 5 | 11, 611, 118, 86.1 | 2/17/2012 | MT |
| 108 | 145,147.2, 147.22, 144.11, 147 | 2/17/2012 | MT |
| 254 | 2R, 8R, 9R | 2/17/2012 | MT |

## SEARCH NOTES

| Search Notes | Date | Examiner |
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| | | |

## INTERFERENCE SEARCH

| Class | Subclass | Date | Examiner |
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| | | | |

# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 13/068,358

## APPLICATION AS FILED - PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY FEE($) |
|---|---|---|---|---|---|---|---|
| BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | 330 |
| SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | 540 |
| EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | 650 |
| TOTAL CLAIMS (37 CFR 1.16(i)) | 15 minus 20 = | * | | | OR | x 52 = | 0.00 |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | 6 minus 3 = | * 3 | | | | x 220 = | 660 |
| APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $270 ($135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | 0.00 |
| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | 0.00 |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | 2180 |

## APPLICATION AS AMENDED - PART II

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT A | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

| | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE($) | SMALL ENTITY ADDITIONAL FEE($) | OR | OTHER THAN SMALL ENTITY RATE($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE($) |
|---|---|---|---|---|---|---|---|---|---|---|
| AMENDMENT B | Total (37 CFR 1.16(i)) | * | Minus | ** | = | x = | | OR | x = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | x = | | OR | x = | |
| | Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NUMBER | FILING or 371(c) DATE | GRP ART UNIT | FIL FEE REC'D | ATTY.DOCKET.NO | TOT CLAIMS | IND CLAIMS |
|---|---|---|---|---|---|---|
| 13/068,358 | 05/09/2011 | 3673 | 2180 | 3007.P0418US | 15 | 6 |

**CONFIRMATION NO. 6260**

FLYNN, THIEL, BOUTELL & TANIS, P.C.
2026 RAMBLING ROAD
KALAMAZOO, MI 49008-1631

**FILING RECEIPT**

*OC000000047768771*

Date Mailed: 05/19/2011

Receipt is acknowledged of this reissue patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

**Applicant(s)**

Clifford E. Lambarth, Portage, MI;

**Assignment For Published Patent Application**

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**Domestic Priority data as claimed by applicant**

This application is a REI of 12/002,958 12/19/2007 PAT 7,540,047
which is a DIV of 11/172,434 06/30/2005 PAT 7,398,571
which claims benefit of 60/613,151 09/24/2004

**Foreign Applications** (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)

**If Required, Foreign Filing License Granted:** 05/19/2011
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/068,358**
**Projected Publication Date:** None, application is not eligible for pre-grant publication
**Non-Publication Request:** No
**Early Publication Request:** No

**Title**

AMBULANCE COT WITH PINCH SAFETY FEATURE

**Preliminary Class**

005

## PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

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For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

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## Title 37, Code of Federal Regulations, 5.11 & 5.15

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U.S. PTO
13/068358
05/09/2011

PATENT APPLICATION




IN THE U.S. PATENT AND TRADEMARK OFFICE
Express Mail Label No.: EM 573 689 505 US
Attorney Docket No.: 3007.P0418US
May 9, 2011

Mail Stop Reissue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**REISSUE APPLICATION TRANSMITTAL**

Sir:

Transmitted herewith is the application for reissue of U.S. Utility Patent No. 7 540 047, issued on June 2, 2009.

Inventor: Clifford E. LAMBARTH

Title: AMBULANCE COT WITH PINCH SAFETY FEATURE

Enclosed are the following:

1. Copy of U.S. Patent No. 7 540 047:
   11 pages of Specification
   1 page of Claims
   1 page of Abstract
   61 sheets of Drawings

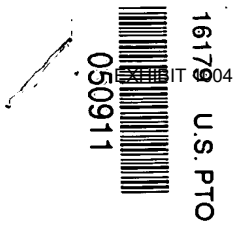
2. Reissue Application Declaration and Power of Attorney by Inventor (6 pages).

3. Amendment Before First Office Action including Transmittal
   The claims are amended and there is attached a separate statement in the Remarks section as to the status of the claims and an explanation of the support in the specification for the changes in accordance with 37 CFR § 1.173(c).

4. Information Disclosure Statement with Form PTO-1449 and one copy of each non-U.S. patent/publication document.

5. Surrender of the original letters patent in accordance with 37 CFR § 1.178 is attached. Offer to surrender is by the inventor along with assent of assignee. **This issue is moot in view of 37 CFR 1.178.**

EXHIBIT 1004 PAGE0194




PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

May 9, 2011

Express Mail No. EM 573 689 505 US

Applicant(s): Clifford E. LAMBARTH

Title: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: Unknown Group: Unknown

Confirmation No.: Unknown

Filed: Unknown Examiner: Unknown

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Mail Stop Reissue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Herewith is an amendment in the above-identified application.

[ ] Applicant claims small entity status. See 37 CFR 1.27.

[X] The additional filing fee has been calculated as shown below:

| For | No. Filed | No. Extra | (X) LG Entity | RATE | ( ) SM Entity | Fee |
|---|---|---|---|---|---|---|
| Total Claims | ( 15 - 20 = 0) | | x $ 52.00 | | x $ 26.00 | $0.00 |
| Indep. Claims | ( 6 - 3 = 3) | | x $220.00 | | x $110.00 | $660.00 |
| [ ] Multiple Dep. Claim | | | + $390.00 | | + $195.00 | 0.00 |
| * * * TOTAL FILING FEE * * * | | | | | | $ 660.00 |

[ ] Pursuant to 37 CFR 1.136(a), please extend the shortened period for response by month(s). The extension fee is: $.

[X] A Check for $2,180.00 is enclosed to cover fees.

[X] Please credit any overpayment, or charge any additional filing fee required under 37 CFR 1.16 or 1.17 by this communication, to Deposit Account No. 06-1382.

DGB/kc

David G. Boutell Reg. No. 25 072



FERNO: IPR2024-00042
EXHIBIT 1004 PAGE0194

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

"Express Mail" Mailing Label No.: EM 573 689 505 US

Date of Mailing: May 9, 2011

Applicant(s): Clifford E. LAMBARTH

Title: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: Unknown Group: Unknown

Confirmation No.: Unknown

Filed: Unknown Examiner: Unknown

International Application No.: n/a

International Filing Date : n/a

Atty. Docket No.: 3007.P0418US

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

EXPRESS MAILING CERTIFICATE

Sir:

I hereby certify that the attached paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

FLYNN, THIEL, BOUTELL & TANIS, P.C.

By: _____

Date: May 9, 2011

Document(s) attached: REISSUE APPLICATION TRANSMITTAL
dated May 9, 2011
including enclosures listed thereon

Telephone: (269) 381-1156

191.05/05

6. Statement Under 37 CFR § 3.73 (b).

7. The filing fee is calculated as shown below, after entering any enclosed Amendment which requests entry before such calculation:

| For | No. Filed | No. Extra | (X) RATE LG Entity | ( ) SM Entity | Fee |
|---|---|---|---|---|---|
| Basic Fee | | | $330.00 | | $330.00 |
| Total Claims | ( 6 - 20 = 0) | | x $ 52.00 | | 0.00 |
| Indep. Claims | ( 3 - 3 = 0) | | x $220.00 | | 0.00 |
| [ ] Multiple Dep. Claim | | | + $390.00 | | 0.00 |
| [ ] Application Size Fee | | | + $270.00 | | 0.00 |
| * * * TOTAL FILING FEE * * * | | | | | $ 330.00 |

[X] Reissue Search Fee $540.00.

[X] Reissue Examination Fee $650.00.

[X] A Check for $2,180.00 is enclosed to cover fees.

[X] The Commissioner is hereby authorized to charge payment of the following fees associated with this communication or to credit any overpayment to Deposit Account No. 06-1382.

Please direct all telephone calls to the undersigned at telephone number (269) 381-1156.

Respectfully submitted,
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| David G. Boutell | Reg. No. 25 072 |
| Sidney B. Williams, Jr. | Reg. No. 24 949 |

Encl: Listed above

103.05/04

US007540047B2

(12) **United States Patent**
**Lambarth**

(10) **Patent No.: US 7,540,047 B2**
(45) **Date of Patent: Jun. 2, 2009**

(54) **AMBULANCE COT WITH PINCH SAFETY FEATURE**

(75) Inventor: **Clifford E. Lambarth**, Portage, MI (US)

(73) Assignee: **Stryker Corporation**, Kalamazoo, MI (US)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/002,958**

(22) Filed: **Dec. 19, 2007**

(65) **Prior Publication Data**

US 2008/0211248 A1 Sep. 4, 2008

**Related U.S. Application Data**

(62) Division of application No. 11/172,434, filed on Jun. 30, 2005, now Pat. No. 7,398,571.

(60) Provisional application No. 60/613,151, filed on Sep. 24, 2004.

(51) **Int. Cl.**
*A61G 1/02* (2006.01)
*A61G 15/06* (2006.01)

(52) **U.S. Cl.** ..... **5/611**; 5/86.1

(58) **Field of Classification Search** ..... 5/11, 5/611, 86.1, 118; 296/20; 108/144.11, 145, 108/147.2, 147.22, 147; 254/2 R, 8 R, 9 R
See application file for complete search history.

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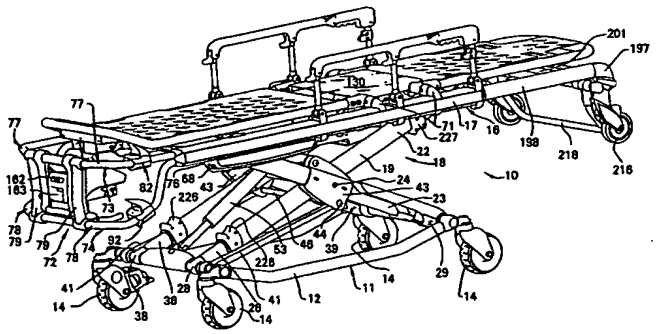
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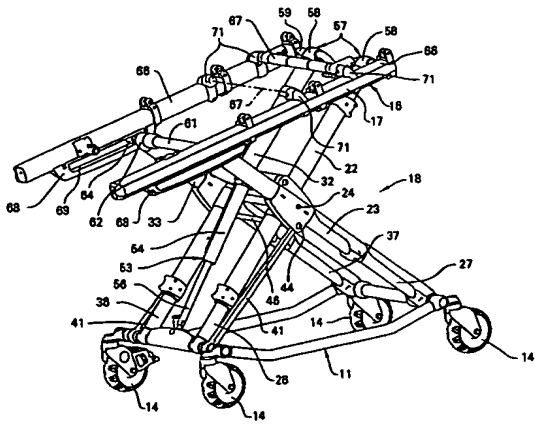
*Primary Examiner*—Michael Trettel
(74) *Attorney, Agent, or Firm*—Flynn, Thiel, Boutell & Tanis, P.C.

(57) **ABSTRACT**

An ambulance cot is disclosed and the ambulance cot has, if desired, a wheel supported base and a litter raisable and lowerable by a powered elevating mechanism oriented between the base and the litter. The ambulance cot also has wireless communication capability to facilitate communication between the ambulance cot and a loading system on an ambulance as well as facilitating wireless troubleshooting via a handheld wireless unit. The ambulance cot also has a longitudinally extendable head section. The ambulance cot also has several accessories, such as an accessory hook mounted to the underside of the fowler, and a collapsible pouch accessory fastened to the retractable head section and the litter frame as well as a pinch safety feature.

**6 Claims, 61 Drawing Sheets**





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# AMBULANCE COT WITH PINCH SAFETY FEATURE

## CROSS REFERENCE TO RELATED APPLICATIONS

This application is a division of U.S. application Ser. No. 11/172,434, filed Jun. 30, 2005, now U.S. Pat. No. 7,398,571, and claims the benefit of U.S. Provisional Application No. 60/613,151, filed Sep. 24, 2004.

## FIELD OF THE INVENTION

This invention relates to an ambulance cot and accessories. This invention also relates to an ambulance cot having a wheel supported base and a litter raisable and lowerable by a powered elevating mechanism oriented between the base and the litter. This invention also relates to an ambulance cot having a wireless communication capability to facilitate communication between the ambulance cot and a loading system on an ambulance as well as facilitating wireless troubleshooting via a handheld wireless unit. This invention also relates to an ambulance cot having a longitudinally extendable head section with a latching mechanism to fix it in selected locations.

## BACKGROUND OF THE INVENTION

Emergency Medical Service (EMS) personnel are required to handle the combined weight of a patient and the ambulance cot during various stages of maneuvering of the ambulance cot while separated from the ambulance. This cot manipulation often requires that the patient supported on the litter be lifted to various elevated heights above the floor. In some instances, the weight factor can cause EMS personnel injury that requires medical treatment.

As the inclusion of more and more sophisticated technology onto ambulance cots continues to occur, there is an increasing need to be able to quickly and accurately diagnose the complex equipment without requiring the ambulance cot to be removed from service.

Accordingly, it is advantageous to provide an ambulance cot equipped with an elevating mechanism to facilitate a lifting and lowering of the litter as well as an ability of the ambulance cot to communicate diagnostic issues in a convenient way without requiring removal of the ambulance cot from a field of use for a prolonged period of time.

## SUMMARY OF THE INVENTION

This invention relates to an ambulance cot and accessories. This invention also relates to an ambulance cot having a wheel supported base and a litter raisable and lowerable by a powered elevating mechanism oriented between the base and the litter. This invention also relates to an ambulance cot having a wireless communication capability to facilitate communication between the ambulance cot and a loading system on an ambulance as well as facilitating wireless troubleshooting via a handheld wireless unit. This invention also relates to an ambulance cot having a longitudinally extendable head section with a latching mechanism to fix it in selected locations.

## BRIEF DESCRIPTION OF THE DRAWINGS

Various objects and purposes of the invention will become apparent based upon a review of the following specification and upon a review of the several drawings, in which:



FIG. **1** is an isometric view of an ambulance cot embodying the invention, which ambulance cot is in the fully raised position;

FIG. **2** is an isometric view of an ambulance cot similar to FIG. **1**, except that the ambulance cot is in a mid-height position;

FIG. **3** is an isometric view of an ambulance cot similar to FIG. **1**, except that the ambulance cot is in the fully collapsed and lowered position;

FIG. **4** is an isometric view of a fragment of the hydraulic elevating mechanism on the ambulance cot;

FIG. **5** is a fragmentary isometric view of the base, elevating mechanism and a fragment of the litter on the ambulance cot;

FIG. **6** is an isometric view of a fragment of the litter frame;

FIG. **7** is a side view of a collapsed base and elevating mechanism on the ambulance cot;

FIG. **8** is an isometric view of a foot end lift handle assembly on the ambulance cot;

FIG. **9** is a side elevational sectional view of the foot end lift handle assembly sectioned through the switches;

FIG. **10** is an isometric view of a switch housing that is mounted on the foot end lift handle assembly;

FIG. **11** is an electrical schematic of a switch mounted on the switch housing illustrated in FIG. **10**;

FIG. **12** is a bottom view of a release handle mechanism mounted on the foot end lift handle assembly, which handle is in the stowed position;

FIG. **13** is a view similar to FIG. **12**, except that the handle has been shifted to an operative position;

FIG. **14** is a view similar to FIG. **13**, except that the handle has been moved to an operated position;

FIG. **15** is an isometric view of a mounting assembly on the ambulance cot for the hydraulic circuit;

FIG. **16** is a fragmentary sectional view of a portion of the base whereat the base connects to an X frame member;

FIG. **17** is a hydraulic circuit diagram embodied on the ambulance cot;

FIGS. **18-23** are additional illustrations of the hydraulic circuit diagram illustrated in FIG. **17**, except that various valves have been shifted to demonstrate operation of the hydraulic circuit;

FIG. **24** is a schematic representation of a control for the hydraulic circuit;

FIG. **25** is a decision tree diagram representative of the operational characteristics of the control illustrated in FIG. **24** and the hydraulic circuit of FIGS. **17-23**;

FIG. **26** is an isometric view of the litter and similar to the illustration in FIG. **1**;

FIG. **27** is an isometric view of a fragment of the ambulance cot in the collapsed and lowered position inside a cargo area of an ambulance;

FIG. **28** is a bottom view of the hydraulic assembly illustrated in FIG. **15** (minus the mounting assembly);

FIG. **29** is a view similar to FIG. **28**, except that one of the valves has been actuated;

FIG. **30** is a view similar to FIG. **29**, except that both of the valves have been actuated;

FIG. **31** is a sectional view of one of the valves illustrated in FIGS. **28-30**;

FIG. **32** is a decision tree diagram for the logic employed on a handheld diagnostics tool;

FIG. **33** is a decision tree diagram for the general logic employed on the cot and load system in an ambulance to facilitate wireless diagnostics;

FIG. 33A is a modified decision tree diagram for the logic employed on a handheld tool used for wireless programming, remote control and diagnostics.

FIG. 34 is a fragmentary isometric view of an antenna system on the ambulance cot as well as an antenna system on a load arm provided on the ambulance;

FIG. 35 is a side elevational view of the ambulance cot in the fully collapsed position with the head section retracted;

FIG. 36 is a view similar to FIG. 35, except that the head section on the ambulance cot has been moved to the fully deployed position;

FIG. 37 is a fragmentary isometric view of the head section on the ambulance cot;

FIG. 38 is a view similar to FIG. 37, except that a handle has been shifted to a fully operated position;

FIG. 39 is a side view of the head section with the handle in a first position;

FIG. 40 is a view similar to FIG. 39, except that the handle has been moved to the fully operated second position;

FIG. 41 is a view similar to FIG. 40, except that the handle has been shifted back to its first position illustrated in FIG. 39;

FIG. 42 is a sectional view of a latch mechanism on the head section;

FIG. 43 is a view similar to FIG. 42, except that the latch mechanism has been shifted to its fully operated position;

FIG. 44 is an isometric view of a fully folded foldable safety bar on the head section;

FIG. 45 is a side elevational view of the safety bar in the fully folded position as illustrated in FIG. 44;

FIG. 46 is a view of the safety bar in the unfolded position;

FIG. 47 is a bottom isometric view of the foot end lift handle assembly with a battery locked into an operating position;

FIG. 48 is a view similar to FIG. 47 except that the battery has been moved to an inoperative position;

FIG. 49 is a fragmentary isometric view of a non-circular X frame member receiving therein a circular further X frame member;

FIG. 50 is an isometric view of the head end of the cot and showing on the underside of the fowler an accessory hook;

FIG. 51 is an enlarged view of a fragment of FIG. 50;

FIG. 52 is an isometric view of the cot having a collapsible pouch accessory thereon, which pouch is in the extended position of use in response to an extension of the head section;

FIG. 53 is an enlarged view of a fragment of FIG. 52;

FIG. 54 is a plan view of the pouch accessory;

FIG. 55 is a view similar to FIG. 52 but with the pouch in the collapsed condition in response to a retraction of the head section;

FIG. 56 is an enlarged view of a fragment of FIG. 55;

FIG. 57 is a partial cross-sectional view of a retractable head section latch disabler in a disengaged position;

FIG. 58 is a partial cross-sectional view according to FIG. 57 of the latch disabler in an engaged position;

FIG. 59 is a decision tree diagram for the logic employed in environments utilizing a Radio Frequency Identification tag;

FIG. 60 is an enhanced decision tree diagram for FIG. 59 presenting the general logic employed during a normal drive mode;

FIG. 61 is a decision tree diagram for the logic employed in the FIG. 59 environment, particularly during a loading of the ambulance cot onto the load mechanism on the ambulance;

FIG. 62 is an exploded perspective view of the retractable head section and latch disabler of FIGS. 57-58;

FIG. 63 is a perspective view of the head section of the ambulance cot aligned with an antler system for an ambulance cargo area; and



FIG. 64 is a perspective view of the head section engaged with the antler system of FIG. 63.

## DETAILED DESCRIPTION

### Ambulance Cot

An ambulance cot 10 embodying the invention is illustrated in the drawings. The ambulance cot 10 is similar to the ambulance cots disclosed in U.S. Pat. No. 5,537,700 and WO 2004/064698, the subject matters thereof being incorporated herein by reference. The ambulance cot 10 includes a base frame 11 composed of longitudinally extending side rails 12 and crosswise extending rails 13 interconnected at the ends thereof to the side rails 12 to form a rectangle. Castered wheels 14 are operatively connected to each corner of the rectangle base frame formed by the rails 12 and 13.

The ambulance cot 10 includes a litter 16 comprising a litter frame 17. An elevating mechanism 18 is provided between the base frame 11 and the litter frame 17 in order to facilitate a lifting and lowering of the litter 16 relative to the ground. More specifically, the elevating mechanism 18 includes a pair of side-by-side oriented "X" frames 19 and 21. The X frame 19 includes a pair of X frame members 22 and 23 connected together adjacent their midlength portions by means of a pivot axle 24. Each of the X frame members 22 and 23 is hollow and telescopingly receives therein a further X frame member 26 and an X frame member 27, respectively. The further X frame members 26 and 27 are supported for movement into and out of the respective X frame members 22 and 23. The distal end of the further X frame member 26 is secured via a connection 28 to the cross rail 13 at the left end (foot end) of the base frame illustrated in FIG. 1 whereas the distal end of the further X frame member 27 is connected via a connection 29 to the cross rail 13 at the right end of the base frame 11.

The X frame 21 is similarly constructed and includes a pair of X frame members 32 and 33 which are connected together at about their midlength portions by the aforesaid axle 24. While the axle 24 is illustrated to extend laterally between the X frames 19 and 21, it is to be understood that separate axles 24 can, if desired, be employed (as shown in FIG. 50). The X frame members 32 and 33 are hollow and telescopingly receive therein a further X frame member 36 telescopingly received in the X frame member 32 whereas a further X frame member 37 is telescopingly received in the X frame member 33. The distal end of the further X frame member 36 is connected via a connector 38 to the cross rail 13 at the foot end of the base frame 11 and the distal end of the further X frame member 37 is connected via a connector 39 to the cross rail 13 at the head end of the base frame 11. The X frame members 22, 26 extend parallel to the X frame members 32, 36 whereas the X frame members 23, 27 extend parallel to the X frame members 33, 37.

Referring to FIG. 4, the cross rail 13 at the foot end of the base frame 11 is illustrated. To the cross rail 13 there is pivotally connected a pair of laterally spaced linkage members 41. In this particular embodiment, each of the linkage members 41 includes at the end thereof adjacent the cross rail 13 a bore 42 which encircles the cross rail 13 to facilitate the pivotal connection of each of the linkages 41 about the longitudinal axis of the cross rail 13. The ends of each of the linkages 41 remote from the cross rail 13 are connected to respective laterally spaced brackets 43 by means of a fastener 44. In this particular embodiment, a sleeve 46 extends between the respective brackets 43 and receives therein the respective fastener 44 to facilitate the connection of the link-

ages **41** to the brackets **43**. The axle **24** also facilitates a connection of the respective brackets **43**. Each of the brackets **43** includes a receptacle **47** into which is received a respective X frame member **23** and **33** as illustrated in FIG. **1**. In this particular embodiment, the axle **24** passes through an opening provided in each of the respective X frame members **23** and **33**.

A first bracket **48** (FIG. **4**) is fixedly secured to the cross rail **13**. A second bracket **49** is secured to a rod **51** that is connected to and extends between the respective brackets **43**. In this particular embodiment, the rod **51** is connected to each bracket by a respective fastener **52**. It is to be noted that there is a spacing between the axle **24** and the respective rods **46** and **51**. The purpose of this spacing will become apparent below.

At least one linear actuator **53** (two, if desired to provide improved stability) is connected to and extends between the respective brackets **48** and **49**. In this particular embodiment, the linear actuator **53** includes a hydraulic cylinder housing **54** fastened to the bracket **49**, which cylinder housing **54** includes a reciprocal rod **56** having a piston (not illustrated) at one end thereof located within the cylinder housing **54**. The distal end of the reciprocal rod **56** is connected in a conventional manner by a universal-like joint **55** to the bracket **48**. That is, the universal joint allows pivotal movement about two orthogonally related axes. As will be evident from FIG. **4**, extension and retraction of the reciprocal rod **56** will facilitate movement of the brackets **43** about the axis of the rod **46**. The end of the rod is lengthwise adjustable to accommodate tolerances encountered during production.

As is illustrated in FIG. **5**, the ends of the X frame members **22** and **32** remote from the base frame **11** are each pivotally secured to a cross rail **59** adjacent the head end of the litter frame **17** as at **57** and by respective connectors **58**. The connectors **58** are each relatively movable with respect to the cross rail **59**. In one embodiment (FIG. **6**), on the other hand, the ends of the X frame members **23** and **33** remote from the base frame **11** are connected by a hollow pivot tube **61** via connectors **62**. Only one of the connectors **62** is illustrated in FIG. **6**, it being understood that the end of the X frame member **23** remote from the base frame **11** also has a connector **62** thereon. A slide bearing (not shown) can, if desired, be provided to allow longitudinal movement of the X frame member **33** along the litter rail **66**. Alternatively, a timing rod **63** can be relatively rotatably received inside the pivot tube **61**. Opposite ends of the timing rod **63** have a pinion gear **64** fastened thereto and rotatable therewith. The purpose of the timing rod and the pinion gear **64** oriented at the opposite ends thereof will become apparent below. If desired, the X frame members **23**, **33** and the pivot tube **61** can be welded together to enhance the overall strength and resistance to twisting characteristics.

As is shown in FIG. **5**, the litter **16** comprises a litter frame **17** which consists of a pair of lengthwise extending side rails that are laterally spaced from one another, which side rails **66** are connected at the head end by the aforesaid cross rail **59**, further cross rails **67** and other cross rails not illustrated. A housing **68** (see also FIG. **6**) is secured to the underside of each of the side rails **66** at a location spaced from the head ends thereof. Each housing **68** has an inwardly opening recess **69** therein, the openings in each of the housings **68** opposing one another. In one embodiment, the openings **69** each have a downwardly facing upper wall **71** to which is secured a toothed rack **72** extending lengthwise of each of the respective side rails **66**. The teeth of each of the pinion gears **64** are configured to mesh with the teeth of the toothed rack **72**. Since the pinion gears **64** are fixedly secured to the timing rod **63**, the mating teeth on the pinion gear **64** and the rack **72** will prevent twisting of the elevating mechanism **18** as it raises and lowers the litter **16** relative to the base frame **11**.

In this particular embodiment, the longitudinally extending side rails **66** of the litter frame **17** are hollow. Thus, the cross rails **59** and **67** as well as others not specifically described are secured by brackets to the exterior surface of each of the side rails **66**. Several of the brackets **71** are illustrated in FIG. **5**.

A foot end lift handle mechanism **72** is illustrated in FIG. **8** and consists of a pair of vertically spaced U shaped frame members **73** and **74**. The legs of each of the U shaped frame members **73** and **74** are joined together by a bracket **76** (only one bracket being illustrated in FIG. **8**), which bracket **76** is fastened to the respective legs by fasteners not illustrated. Each bracket **76** is telescoped inside of the foot end of the respective side rail **66** as illustrated in FIG. **1**. Further, the legs of the lower frame member **74** diverge away from the legs of the frame member **73** so that there is provided pairs of vertically spaced hand grip areas as at **77** and **78** on the respective frame members **73** and **74**, respectively. Plural spacer brackets **79** are connected to the bight portions of each of the frame members **73** and **74** to maintain the vertical spacing between the grip areas **77** and **78**. Fasteners (not illustrated) facilitate a connection of the brackets **76** to the interior of each of the respective side rails **66**.

A battery mount **89** is secured to the foot end lift handle assembly **72**, preferably to the underside of the assembly as show in FIGS. **47** and **48**. The battery mount **89** includes a downwardly opening bayonet socket **90** having electrical contacts **94** exposed therein for connection to a properly configured battery **160** shown in broken lines. The manner in which the battery **160** connects to the electrical contacts **94** when the battery is in the broken line position shown in FIG. **48** is conventional and, therefore, further discussion about this connection is believed unnecessary. The electrical contacts **94** on the battery mount **89** are connected to the control **158** as schematically shown in FIG. **24**. In order to connect the battery **160** into place in the battery mount **89**, the battery is moved leftwardly from the FIG. **47** disconnected inactive position to the FIG. **48** connected and active position. The battery **160** in the installed position of FIG. **48** is releasably locked in place and is capable of withstanding excessive acceleration forces that will occur during an accident to remain locked in place in the FIG. **48** position.

One leg **81** of the frame member **73** includes a switch housing **82** fastened thereto by at least one fastener **83** (FIG. **9**). The switch housing **82** is located in an ergonomically advantageous position to the obvious grasping point of the user. An enlarged isometric view of the switch housing **82** is illustrated in FIG. **10**. The switch housing has a pair of manually engageable buttons **84** and **86** thereon. The manually engageable buttons **84** and **86** are shielded from above by a shroud **87** and are of a low profile membrane design so as to prevent inadvertent actuation of the buttons **84** and **86** by a patient lying on the upper surface of the litter **16**. That is, the shroud **87** is oriented at the head end of the switch housing **82**. The switch housing **82** includes an opening **88** extending therethrough and through which the leg **81** of the frame **73** extends. The fastener **83** extends through a hole in the leg **81** to facilitate a connection of the housing **82** to the leg **81** extending through the opening **88**.

Similarly, the leg **91** of the frame member **74** includes a further switch housing **92**, located in an ergonomically advantageous position to the obvious grasping point for the user, having an opening **98** extending therethrough and through which the leg **91** extends. A fastener **93** facilitates a

connection of the switch housing **92** to the leg **91** that extends through the opening **98**. The switch housing **92** includes a construction identical to the switch housing **82** illustrated in FIG. **10** and it includes a pair of manually engageable buttons **84** and **86** which, as will be explained in more detail below, provide a redundant operation with respect to the buttons in the switch housing **82**. The switch housing **92** also includes a shroud **97** similar to the shroud **87** and it is provided for the same purpose, namely, to shield the buttons **84**, **86** from inadvertent actuation by a patient lying on the litter **16**. In addition to the safety shrouds **87** and **97** preventing inadvertent actuation of the push buttons **84** and **86**, each of the push button switches **84**, **86** have a dual switch closing feature requiring both switch contacts to be closed (see FIG. **11**) in order to effect the desired operation as will be explained in more detail below.

The bight section **99** of the frame member **74**, particularly at the base of one of the spacers **79**, there is provided a bracket **101** secured to the bight section by a fastener **102** (FIG. **12**). A manually engageable handle **103** is pivotally secured to the bracket **102** by a pivot axle **104**. The handle includes a pair of arcuately spaced shoulders **106** and **107**. A cable support member **108** is pivotally secured to the bracket **101** by a pivot axle **109**. A cable, here a Bowden cable **111**, is fastened as at **112** to the cable support **108** (at one end) while the other end is fastened to a valve actuation device which will be explained in more detail below. The cable **111** extends into and through the hollow interior of the frame member **74**. The cable support member **108** has a pair of arcuately spaced shoulders **113** and **114** that operatively cooperate with the arcuate shoulders **106** and **107**, respectively, as will be explained in more detail below. The handle **103** as illustrated in FIG. **12**, is in a stowed out of the way position. When it is desired to move the handle and use it for operation of the ambulance cot, it is shifted clockwise in its position from the position illustrated in FIG. **12** to the position illustrated in FIG. **13** at which time the shoulder **107** engages the shoulder **114** on the cable support member **108**. When the handle **103** is further pivoted clockwise about the axle **104** to the position illustrated in FIG. **14**, the cable support member **108** will pivot about the axle **109** to effect a pulling of the cable **111** to effect actuation of a valve structure that will be described in more detail below. A torsional spring **116** (only the ends of which are illustrated in FIGS. **12-14**) serves to continually urge the handle **103** counterclockwise to the stowed position so that the shoulders **106** and **113** will engage one another.

Referring to FIG. **5**, and as stated above, there is provided a pair of longitudinally spaced brackets **71** on each of the side rails **66**. Between laterally spaced ones of the brackets **71**, there extends a respective cross rail **67**. Referring to FIG. **15**, these cross rails **67** support a hydraulic assembly bracket **121**. More specifically, the hydraulic assembly bracket **121** includes several ears **117** which operatively engage the respective cross rails **67** and from which ears is suspended the hydraulic assembly bracket **121**. The hydraulic assembly bracket **121** is generally U shaped with the bight section forming a base upon which is mounted a variable speed electric motor **122**, a hydraulic manifold plate **123** and a hydraulic pump **124**. The hydraulic pump **124** has two outlets **126** and **127**. The hydraulic outlets **126** and **127** are connected through hydraulic conduits **128**, **129**, respectively (FIG. **4**), to respective opposite ends of the hydraulic cylinder housing **54**. In this particular embodiment, the cross rails **67** also provide a support for a seat section **130** (FIG. **1**) on the litter **16**.

Referring to FIGS. **1** and **16**, the further X frame members **26**, **27**, **36** and **37** are all connected through respective connectors **28**, **29**, **38** and **39** to a cross rail **13**. FIG. **16** illustrates a representative example of the connectors **28**, **29**, **38** and **39**. That is, each connector includes a sleeve **118** that encircles the cross rail **13** and includes a stem **119** that is telescoped inside the interior of each of the respective further X frame members **26**, **27**, **36**, **37**. A bearing assembly **131** is provided between the stem **119** and the interior surface of the further X frame members **26**, **27**, **36**, **37**. Thus during normal use, off center loads and flex in the aluminum frame members may cause some twisting in the geometry of the frame members which will cause a binding of the mechanism. In order to accommodate this twist, the bearing assembly **131** will facilitate a relative rotation between the sleeve **118** and the further X frame members **26**, **27**, **36**, **37**. The bearing assembly **131** becomes particularly important when the X frame members **22**, **23**, **32**, **33** are not circular in cross section and the further X frame members **26**, **27**, **36**, **37** are circular in cross section (as depicted in FIG. **49**). That is, a bushing **236** is fixedly positioned inside the non-circular X frame members **22**, **23**, **32**, **33**, which bushing **236** has a circular opening therethrough through which the further X frame members **26**, **27**, **36**, **37** slidably extend. The end of the further X frame members **26**, **27**, **36**, **37** remote from the base **11** have a further bushing **237** longitudinally slidably disposed in the X frame members **22**, **23**, **32**, **33**. The bushing **237** is relatively moveably secured to the respective further X frame members **26**, **27**, **36**, **37**, such as through the use of a rivet and washer mechanism **238** being secured to the further X frame members **26**, **27**, **36**, **37** on opposite sides of the bushing **237** so as to prevent a relative longitudinal movement of the bushing **237** along the length of the further X frame members and so that the further X frame members can rotate about their respective longitudinal axes relative to the bushing **237**..

## Hydraulic Circuit

A hydraulic circuit **132**, illustrated in FIGS. **17-23**, is included in the manifold plate **123** (FIG. **15**). It is to be understood that the pump **124** and the linear actuator **53** and the conduits carrying hydraulic fluid to the linear actuator **53** are preferably always filled with hydraulic fluid. Further, the pump **124** is reversible and the electric motor **122** driving same is also reversible. As a result, there will be no delay in actuation of the linear actuator in response to an operation of the pump **124** by the electric motor **122**. The output of the pump **124**, in one direction of operation, will supply hydraulic fluid through a pilot operated check valve **133** to the outlet **126** connected through the hydraulic conduit **128** to the end of the cylinder housing **54** remote from the reciprocal rod **56**. Operation of the pump **124** in the opposite direction will direct fluid through a poppet valve **134** having in parallel therewith an orifice or fluid throttle **136** and a two way poppet valve **137** to the outlet **127** which in turn is connected through a conduit **129** to the end of the cylinder housing **54** adjacent the reciprocal rod **56**. The fluid controlling the pilot operated check valve **133** is delivered to it through a conduit **138** connected to the fluid path intermediate the poppet valve **134** and the pump **124**. There is also provided a pressure relief operated check valve **139** connected at one end between the pilot operated check valve **133** and the pump **124** and, at the other end, to a tank or reservoir for the hydraulic fluid. Intermediate the pilot operated check valve **133** and the outlet **126**, there is provided a fluid passageway **142** extending to a series connected pressure compensated flow controller **143**, a spring controlled check valve **144** and a two way poppet valve **146** connected to the tank **141**. The spring is sized in this check valve so as to provide a dampening against a surge of fluid when passively lowering. This prevents a lurch in the lower-

ing action providing increased comfort to the patient during lowering. The passageway **142** includes a further passageway **147** connected through a spring biased check valve **148** to tank **141**, on the one hand and through a passageway **149** to a manual release valve **151** also connected to tank **141**. The outlet **127** is connected through a passageway **152** to a spring biased check valve **153** connected to the tank **141**, on the one hand, and through a passageway **154** to a series connected fluid throttle **156** and thence to a further manual release valve **157** connected to the tank **141**.

The hydraulic circuit **132** is controlled by a control mechanism **158**, which control mechanism is also schematically represented in FIGS. **24** and **25**. A hydraulic fluid pressure monitoring mechanism **159** is connected to the outlet **126** and provides a signal indicative of the magnitude of the fluid pressure to the control mechanism **158**. The battery **160** (FIGS. **47** and **48**) on board the ambulance cot provides power to the control mechanism **158**. The charged status of the battery **160** is linked to a display **161** on a user interface **162** mounted on the foot end lift handle assembly **72** near the battery mount **89**, particularly between the spacer members **79**. The user interface **162** also includes a mode switch (not illustrated) for allowing the user interface to display a multitude of different functions, one of which can be an hour meter indicative of the total elapsed time that the electrical motor **122** has been operated, such as "HH:MM", where H is hour and M is minute or in tenths of an hour such as "HH.H hours". Any other indication of total elapsed time from a set point is contemplated. In addition, it is also possible for the user interface to display the elapsed amount of time that the control **158** has been on, the elapsed amount of time a certain switch is activated, the elapsed amount of time certain valves have been actuated or the elapsed amount of time a certain pressure has been maintained on the system. These values may be combined to a suitable display to accurately determine the amount of wear that can be expected on the system. As a result, ambulance attendants can more accurately determine what preventative maintenance is required based upon the aforesaid displays. Additionally, a symbol (preferably iconic) can be provided at pre-programmed interval(s) to indicate when service may be necessary.

The control mechanism **158** also receives signals from position sensors provided on the ambulance cot. More specifically, and referring to FIG. **26**, a cover **163** has been removed from the housing **68** to reveal the opening **69** inside the housing. A first transducer **164** is provided inside the opening **69**, particularly at the foot end of the opening **69** whereas a second transducer **166** is oriented at the head end of the opening **69**. These transducers **164** and **166** are, in this embodiment, Hall effect sensors which are used to indicate the low and high heights of the ambulance cot. Alternatively, proximity sensors or reed switches can be employed in place of the Hall effect sensors. These transducers are adjustably positioned in the opening **69** such that they detect a magnetic field of a magnet mounted, for example, on one end of the pivot tube **61** (FIG. **5**) or on the slide bearing thereat (not shown) and oriented on the outboard side of the pinion gear **64** or slide bearing located thereat. Thus, as the pinion gear **64** approaches either one of the transducers **164** or **166**, the magnetic field of the magnet will saturate the respective transducer to create an appropriate signal to the control mechanism **158** that is indicative of the height position of the cot. The position of the transducers **164**, **166** are variable lengthwise of the opening **69** so as to provide an ability to effect a height adjustment for the ambulance cot in both its collapsed and its uppermost position. A specific advantage of having a movable second transducer **166** is that the high height of the ambulance cot can be adjusted to provide a stopping point custom adjusted to a specific ambulance for ease of loading the cot into the ambulance. A further transducer **167** is provided adjacent the second transducer **166** so as to cause an additional signal to be sent to the control mechanism **158**. This additional signal is supplied as feedback to the control mechanism **158** to subsequently control motor speed to effect a smooth stop of the litter **16** in the uppermost position. Similarly, a further transducer **168** can be provided adjacent the first transducer **164** so as to cause a further signal in the form of feedback to be sent to the control mechanism **158** to effect a subsequent controlling of motor speed to effect a smooth stop of the litter **16** in the lowered position. This smooth stopping operation is provided for patient comfort.

The control mechanism **158** also receives signals indicative of the presence of the ambulance cot inside the ambulance. In the preferred embodiment and referring to FIG. **27**, an ambulance cot latching mechanism inside the ambulance includes a rod **169** that extends along one side of the ambulance cot and has adjacent its distal end **171** a bracket **172** which has a magnet **173** provided thereon. The magnet **173** becomes positioned adjacent a transducer (not shown) to send a signal to the control mechanism **158** to effect a total and complete deactivation of the hydraulic lift or lower operation capabilities of the hydraulic circuit. This transducer may optionally be the position transducer **164**.

FIGS. **28-30** are a bottom view of the manifold plate **123** having mounted thereon the reversible electric motor **122** and the reversible pump **124**. If desired, the motor **122** could be driven in one direction and a transmission utilized to effect a reverse operation of the pump **124**. The release valves **151** and **157** are mounted on the manifold plate **123**. The release valve **151** includes a reciprocal stem **174** which, when moved to the right in the aforesaid figures, effects an opening of the valve to allow fluid flow to pass therethrough. Similarly, the release valve **157** has a stem **176** which, when moved to the right in the aforesaid drawing figures, also effects an opening of the valve **157** to allow hydraulic fluid to pass therethrough. Incrementally opening the valve will effect a variable flow through the valve, allowing variable drop rates of the litter. Additionally, the orifice **156** may be sized to control the drop rate of the base **11** when the litter **16** is supported by an attendant or plural attendants. A plate **177** is provided and has holes therethrough which receive the respective stems **174** and **176** therethrough so that an appropriate fastener **178** can effect a fastening of the respective stems **174** and **176** to the plate **177**. The cable **111** is connected to the plate as at **179**. The opposite end of the cable **111** is connected to the release handle mechanism illustrated in FIGS. **12-14**.

In this particular embodiment, and referring to FIG. **31**, the release valves **151** and **157** each have a fluid chamber **181** therein into which hydraulic fluid directly from the outlet port **126** is fed through an inlet port **183**. The valves **151** and **157** each have a reciprocal spool **184** therein, the movement of which is controlled by the tension applied to the stems **174**, **176** by the cable **111**. The spool **184** includes a land **186** having a valve seat surface **187** thereon which mates with a valve seat surface **188** provided on the body **189** of the release valve **151**. A spring (not illustrated) serves to urge the valve seat surface **187** against the valve seat surface **188**, especially when no fluid pressure is applied to the chamber **181**. Once the fluid pressure inside the chamber **181** has been reduced to a desired level, tension applied to the cable **111** urging the spool **184** to the right (FIG. **31**) against the urging of the return spring, the seat surface **187** will be separated from the seat surface **188** to allow fluid to flow from the inlet port **183** to an outlet port **191** and thence to tank **141**. The purpose of the

aforesaid construction of the valves **151** and **157** will facilitate it being necessary that the ambulance cot attendants lift the cot prior to activation of the manual release valves **151** and **157** so that the fluid pressure in the chamber **181** will be reduced to facilitate a rightward movement of the spool **184**.

A conventional velocity fuse **192** (FIG. **17**) is provided in the inlet port to the end of the cylinder housing **54** of the linear actuator **53**, particularly at the end thereof remote from the reciprocal rod **56**. The velocity fuse can also be an integral component of the cylinder housing **54**. This conventional velocity fuse is Model No. 8506 available from Vonberg Valve, Inc. of Rolling Meadows, Ill. The purpose of the velocity fuse is to prevent a rapid lowering of the cot when there is a sudden loss of hydraulic pressure as in the case of a severed hydraulic hose, or accidental manual release with a patient on the cot. A check-valve **195** is provided in parallel to the velocity fuse in order to affect an increased speed of extending of the base. This allows the same or similar speed in powered, and manual mode such that the manual mode may be used in normal use to extend the base when unloading the cot from the ambulance.

## Wireless Diagnosis

The ambulance cot and load system electronics for facilitating a loading of the cot into an ambulance (see also WO 2004/064698, the subject matter of which is to be incorporated herein) contain the capability to interact with a handheld diagnostics tool over a wireless communication link. This tool allows manufacturing and maintenance personnel to perform basic configuration, troubleshooting and complex diagnostic operations on both the cot and load system, while remaining free from physical cable attachment to either unit. An example of the functional descriptions for each of the elements involved in wireless diagnostics are set forth below.

### Wireless Diagnostic Tool

The handheld device or tool **300** (FIG. **34**) is self contained, and includes an antenna **301**, a wireless transmitter and receiver that operate under the same basic protocol as the wireless link connecting the cot and load system during normal operation. Operations such as collecting and configuring control parameters and initiating simple or complex diagnostics tests are supported through this interface. By design, this handheld device is capable of four main modes of operation:

- Two-way active communication mode: The handheld device interacts with one other wireless-capable unit;
- Multi-way active communication mode: The handheld device interacts with two or more wireless-capable units;
- Passive "listen only" mode: The handheld device observes the communication activity which exists near one or more wireless-capable units without disrupting it; and
- Power and at least one of read from and write to an RFID tag described below (can also be included in two-way communication).

Two-way active communication allows the handheld device to interact directly and exclusively with one cot (or one load system) in order to provide streamlined communication during programming or troubleshooting phases. Multi-way communication allows the handheld device to participate in communications with multiple other parties, and allows for more complex troubleshooting and diagnostics operations. For example, when a cot is docked in the load system and a handheld device is brought into proximity of the wireless communication field, it will be able to interact with both units to gather information or allow the user to invoke special tests to verify operation of the loading algorithm. For two-way and multi-way modes, the wireless diagnostic tool is capable of auto-detecting the proper mode in which to operate, which is based on the number of active participants it senses in the wireless communication field. The "listen only" mode is entered at the prompting of the user of the handheld device. This mode is passive in nature, and can be used to analyze communications coming from one unit (cot or load system), or multiple units which are in dialog with one another.

### Cot

The ambulance cot's electronic controller contains software components to support wireless diagnostics capabilities. This software functionality is capable of detecting the difference between a load system that is trying to communicate and a wireless handheld device that is trying to initiate a diagnostic session. As this determination is made, the cot is able to enter into either a normal session with the load system, a dedicated session with the handheld device (if no load system is present), or a three-way session that involves both the handheld device and the load system. In the latter case, the cot software allows normal operation of the loading sequence, while simultaneously supporting a specific set of diagnostics that are useful in troubleshooting the overall system.

### Load System

The load system's electronic controller is also capable of distinguishing between a basic communication session for loading and unloading, and a session which involves diagnostics operations. Using similar software components, the load system will participate in dedicated two-way communication with a handheld device, or allow the device to coexist during a load or unload operation with the cot being present. It is capable of detecting the difference between these various modes of operation, and react accordingly to provide the necessary functional behavior.

FIGS. **32** and **33** provide a further description of the software functionality used in the wireless control and diagnostics features. In FIG. **33**, the blocks entitled "Execute Configure Option" and "Transmit Wireless Response Message" include a read/write command to the RFID tag **302** (described below) when applicable in order to change the user statistics which may be coded on the RFID tag (Count of times programmer accessed, revision of software (if updated) etc).

Referring to FIG. **34**, beneath the seat section **130** there is provided a cot antenna **193**. The load arm on the ambulance (see WO 2004/064698, here in FIG. **34** the load arm **194**) includes a load arm antenna **196**. The two antennas **193** and **196** provide communication between the cot and the load system as well as communication with the handheld unit. The antennas also provide a controlled communication envelope to allow any cot to communicate with any load system or handheld trouble shooting device while not interfering with other load systems/cots in the area. In the preferred embodiment, the cot antenna **193** (FIG. **34**) consists of a loop of wire, as does the load antenna **196**, and the tool antenna **301**. It has been demonstrated that by passing a modulated current through a loop of wire, an electro-magnetic field is produced that can be received by other loops of wire in the environment. It is further known that this modulated "carrier" can be added to a digital signal, allowing the transmission of the digital signal on the modulated carrier. This type of communication is commonly referred to as an active inductive link.

The cot antenna **193**, when configured as described, can additionally be used to remotely power and read a Radio Frequency Identification, or RFID tag **302** (FIG. **34**) mounted on the load arm **194** or a trolley **190** to which the load arm **194** is mounted. Thus, the cot can be configured to selectively communicate with one of the load system and the tool through an active, inductive link; and power and one of read from and write to the RFID tag **302**. The RFID tag **302** is useful in implementing the in-ambulance/in fastener shut-off feature

(shown and described in more detail below) as well as for identifying the device for use with other specific RFID readers specifically as follows:

| code (1 byte) | product code (2 bytes) | CRC (1 byte) | Product specific RFID tag . . . |
|---|---|---|---|

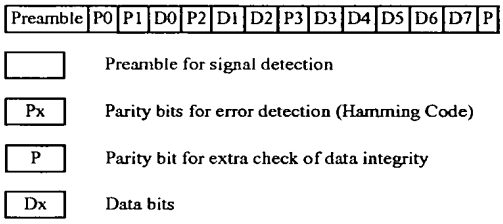
More specifically:

| Product name | Group name | Group (1 byte) | Product (2 bytes) | CRC |
|---|---|---|---|---|
| EMS_COT_LOADING_SYS | Medical_Beds | 2 | 1 | 0x11 |

This information may be used to configure the hand-held tool, or provide contact information for service.

Additionally, other information may be at least one of written to and read from the RFID tag **302** including at least one of the following: Model, Serial number of the unit, Software revision, and Usage statistics (which may include at least one of a count of different powered cots used with the system, and a count of times diagnostic tools accessed or changed the cot or load system(s)).

One exemplary way of establishing communication between the cot and the fastener system or between the cot or load system and the troubleshooting handheld device, as well as communication therebetween, is set forth below.




Preamble

The preamble is a special sequence to separate real data from the random noise. The preamble will contain special characters that are of 'illegal' length. This will cue the processor for a start of packet.

Error Correction Bits

The packet uses four bits for error correction (**P0**, **P1**, **P2**, **P3**). The error correction technique employs a Hamming code algorithm that will allow the processor to correct one bit that has been misinterpreted. Assuming a moderate bit error rate, the odds of a single bit being corrupted are relatively high while the odds of multiple bits being corrupted is relatively very low. Allowing for 1 bit to be corrected will result in an overall greater throughput at a relatively low cost of extra bits.

Parity Bit

The parity bit is an extra check to ensure data integrity. The parity bit is calculated using basic even parity checking; the parity bit is set so that the number of is in the packet will always be an even number. The parity bit will allow detection of a second bit error; however, it will not be able to correct it.

Data Bits

There are 8 data bits. The data bits communicate information about the cot status, an action request or diagnostic information. The most significant bit (D7) indicates whether the data is in diagnostic mode or not. If in diagnostic mode, remaining 7 bits indicate a diagnostic code or response. Otherwise each bit acts as an independent flag for a certain condition. If the transmission gets a response, the value is passed to the master controller; if no response is found, a value of '0'.

TABLE 1

Example of possible Ambulance to Cot Data Bits

| Bit | Name | Value = 1 | Value = 0 |
|---|---|---|---|
| 7 | Normal/Diagnostic | In Normal Mode | In Diagnostic Mode |
| 6 | Arm Load | Detect load on arm | No load detected |
| 5 | Arm Up | Load arm is fully up | Load arm not fully up |
| 4 | Arm Down | Load arm is fully down | Load arm not fully down |
| 3 | Proximity Switch | Prox switch closed | Prox switch open |
| 2 | TBD | | |
| 1 | TBD | | |
| 0 | Comm present | Comm is active | No Comm |

TABLE 2

Example of possible Cot to Ambulance Data Bits

| Bit | Name | Value = 1 | Value = 0 |
|---|---|---|---|
| 7 | Normal/Diagnostic | In Normal Mode | In Diagnostic Mode |
| 6 | Cot load | Detect load on cot legs | No load detected |
| 5 | Cot legs up | Cot legs are fully up/not extended | legs not fully up |
| 4 | Cot legs down | Cot legs are fully down/extended | legs not fully down |
| 3 | Plus button | "+" button is pressed | "+" button not pressed |
| 2 | Minus button | "–" button is pressed | "–" button is not pressed |
| 1 | TBD | | |
| 0 | Comm present | Comm is active | No Comm |

TABLE 3

Example

| Event | A→C | C→A | Comment |
|---|---|---|---|
| Cot "–" button pressed, turns on | — | 111001xx | Patient on Cot, Ambulance not yet in range No response from Ambulance, a value of zero is passed to the cot controller |
| Cot moved within range of Ambulance | 10010xxx | 111001xx | "–" button is still pressed Prox switch is not set, Arm not bearing load |

TABLE 3-continued

| Event | Example A→C | Example C→A | Comment |
|---|---|---|---|
| Cot docked to prox switch | 10011xxx | 111001xx | "–" button is still pressed Prox switch is set, Arm not bearing load |
| Cot legs folding up, Cot drop slightly | 11011xxx | 110001xx | Arm starts to take weight, still down |
| Cot legs continue folding up | 11001xxx | 100001xx | Arm starts lifting up |
| Cot legs completely up | 11001xxx | 101001xx | Arm still lifting |
| Arm is all the Way up | 11101xxx | 101001xx | |
| Button is released Arm still up | 11101xxx | 101000xx | Waiting for cot to be pushed on |

Further software may be provided for the in-ambulance/in-ambulance shut-off feature when used with an RFID tag **302**. When used with the load system (to detect the RFID tag), the upper-level software diagram may look like that illustrated in FIG. **59**.

In operation, and referring to FIG. **59**, upon power-up, the cot attempts communication with the load system in order to detect if it is present. If communication (com) is present, it executes function according to a specific and separate load protocol. If not, the cot communication will switch to check for the RFID tag. If it is not present, the cot drives according to the normal cot protocol. If the cot sees the RFID tag, it will then check for the low Hall Effect (HE) sensor (to determine if the cot legs are retracted). Once fully retracted, the cot inhibits driving (up), and thus activates the in-ambulance/in fastener shut-off feature. The advantages of looking for the Low HE sensor is allowing function of the cot while docked, but not fully loaded. It is reasonably assumed that once the cot is fully retracted, it is locked into the load system, and will be pushed into the ambulance. A further advantage is that normal drive function is returned by simply manually dropping the base such that the low HE sensor is no longer activated, thus allowing normal driving of the cot in the specific instance of a loss of load communication.

Driving normally is described in FIG. **25**, but FIGS. **60** and **61** illustrate the decision tree for the software when the RFID tag **302** is present in the overall system.

## Retractable Head Section and Latch

By comparing FIGS. **35** and **36**, it will be noted that the ambulance cot **10** includes a retractable head section **197**. This feature can be provided on a manual lift cot or a power lift cot. In the power lift environment, and as is illustrated in FIG. **37**, the retractable head section **197** is generally U shaped, namely, having a pair of parallel legs **198** and **199** connected by a pair of brackets **202** to a head rail **203**. A cross brace **200** (FIG. **62**) also connects the brackets **202**. A tubular cross rail **201** is rotatably mounted to the cross brace **200**. The legs **198** and **199** are configured to be slidably received by, into the interior of (shown), next to, or below the respective longitudinally extending side rails **66** on the cot **10**. The handles **210** are fixed to the cross rail **201** for pivotal movement with the cross rail **201** about an axis corresponding to or parallel to the axis of the cross rail **201** in order to facilitate the movement of a pin **204** projecting from each handle **210** about an axis of rotation defined by or parallel to the axis of the cross rail **201**. The pin **204** extends through an arcuate slot **215** in the bracket **202**. The handles **210** are affixed such that actuation of one handle **210** effects a rotation of cross rail **201** and subsequent actuation of the other handle **210** so that the head section may be released by the actuation of a single handle **210**. The pin **204** is connected by a linkage **206** to a latch mechanism **207** on each leg **198** and **199**. The latch mechanism **207** is illustrated in more detail in FIGS. **42** and **43**. More specifically, the latch mechanism **207** includes a housing **208** in which a ramp mechanism **209** is slidably disposed lengthwise of the housing **208**. The ramp mechanism **209** includes a ramp surface **211** against which a pin **212** rests. The pin **212** includes a latch pin **213** that is configured to move laterally into and out of the housing **208**. The position located outside the housing is illustrated in FIGS. **37** and **42**. A spring (not illustrated) urges the pin **212** against the ramp surface **211**. When the handle **210** is rotated about the axis of rotation corresponding to or parallel to the longitudinal axis of the cross rail **201**, the pin **204** is moved from the position illustrated in FIG. **39** to the position illustrated in FIG. **40** to cause a leftward movement of the linkage **206** in each leg **198** and **199** to cause the pin **212** to shift in its position illustrated in FIG. **42** to the position illustrated in FIG. **43**, namely, a position wherein the latch pin **212** has been retracted laterally into the housing **208** of the latch mechanism **207**. A slot **205** in the link **206** is provided which allows independent, passive engagement of the latch pins **213** when the handles **210** are released. This is illustrated in FIG. **41**. A plurality of holes **214** are provided along the length of the side rails **66** and are configured to receive therein the latch pin **213** when in the extended position thereof as shown in FIG. **37**. These holes are located such that access to them is not possible, i.e., under a bumper provided on the exterior of the litter rail **66**. This is done for protection against inadvertent release, foreign matter, or potential pinching point. When the latch pin is received in an associated hole **214** provided in the side rail **66**, the retractable head section will be physically locked to the cot in either the retracted position (FIG. **35**) or the extended position (FIG. **36**).

In a further embodiment of the retractable head section **197**, shown in FIGS. **57-58** and **62**, the handles **210** are capable of being locked against rotation about the cross rail **201** to prevent release of the latch mechanism **207**. Referring to FIG. **57**, the safety bar **218** is fixed to a mounting bracket **260** that is pivotally mounted to the cross brace **200**. The mounting bracket **260** is biased into an at rest position by a torsion spring **261** mounted on the cross brace **200** and engaging the mounting bracket **260** and the bracket **202**. Reference is made to pending patent application Ser. No. 10/850,144, wherein the safety bar **218** can be rotated upwardly in a counterclockwise fashion, by an attendant, toward the head end of the ambulance cot to clear a hook mounted at the mouth of an ambulance cargo area. In the instant invention, the mounting bracket **260** is configured so that the safety bar **218** can also be rotated upwardly in a clockwise fashion toward the interior of the cot, and function as a "latch disabler" to prevent release of the latch mechanism **207**.

A head portion **262** of the mounting bracket **260** is received on the cross brace **200**. The head portion **262** is eccentrically configured about the cross brace **200** such that it includes a ramp portion **264** that extends toward the bracket **202** joining the leg **198** to the head rail **203**. The mounting bracket **260** is arranged underneath a shaft **266** formed in the bracket **202**. The shaft **266** is formed to extend into a central portion of the arcuate slot **215** that receives the pin **204** when the handle **210** is actuated. The shaft **266** is configured to received a pin **268** surrounded by a compression spring **270**. The pin **268** and spring **270** are arranged in the shaft **266** so that the pin is

biased out of the arcuate slot **215** by the spring **270**. The pin **268** is held within the shaft **266** by the head portion **262** of the mounting bracket **260**.

In FIGS. **57-58**, the pin **204** is shown in the at rest position, that is wherein the handles **210** are not actuated. In order for the handles **210** to be actuated, the pin **204** must travel along the arcuate slot **215**. During certain stages of transport, it is desirable to prevent the retractable head section **197** from changing its status from extended to retracted or vice versa. Therefore, it would be advantageous to prevent the inadvertent actuation of the handles **210**. This can be accomplished by preventing the travel of the pin **204** through the arcuate slot **215**, such as by pushing the pin **268** into the slot **215** to block the travel of the pin **204**.

Referring to FIG. **58**, the safety bar **218** has been rotated clockwise about the cross brace **200**. As the safety bar **218** rotates from the position shown in FIG. **57**, the pin **268** rides along the ramp portion **264** of the mounting bracket **260**. The ramp portion **264** is eccentrically configured, so that as the mounting bracket **260** rotates about the cross brace **200**, the radius of the head portion **262** increases, forcing the pin **268** through the shaft **266** and into a blocking position in the arcuate slot **215** as when the safety bar slides over an existing cot fastening mechanism in an ambulance. The safety bar **218** can rotate so that the pin **268** blocks the arcuate slot **215**, preventing the handles **210** from being actuated. Full engagement of the pin **268** occurs when the pin **268** reaches an end **269** of the ramp **264**. This occurs prior to a stop **272** of the mounting bracket **260** abutting the shaft **266**, which prevents further rotation of the safety bar **218**. The torsion springs **261** are mounted one on each side of the safety bar **218**, and act in torsion in opposing directions about cross brace **200**, urging the brackets **260** and the safety bar **218** to a downward, neutral position, whereby the latch disabler is disengaged.

Referring now to FIGS. **63-64**, the retractable head section **197** is configured to engage a portion of a cot fastening mechanism or "antler" system **276** configured for mounting to the floor of the cargo area of an ambulance. The antler system **276** includes a center yoke **278** and a forward yoke **280**. Both yokes **278**, **280** are mounted to the ambulance cargo area floor, with a centerline of the antler system **276** aligned in the fore-aft direction of the ambulance.

The center yoke **278** is formed of two rods **282**, **283** arranged as mirror images about the centerline of the antler system **276**. Each rod **282**, **283** includes a longitudinal segment **284**, **285** and an outwardly divergent segment **286**, **287**, each outwardly divergent segment rising to a rearwardly directed hook or "ear" **288**, **289**.

The forward yoke **280** includes a central segment **290** secured to the ambulance cargo floor and two outwardly divergent arms **291**, **292**. The arms each terminate in an "ear" **293**, **294** that is joined with a respective ear **288**, **289** of the center yoke **278**.

As the ambulance cot **10** is rolled into the ambulance cargo area head end first, as shown by the arrow in FIG. **63**, the safety bar **218** contacts the center yoke **278**. As the cot **10** is rolled further, the center yoke **278** forces the safety bar **218** rearwardly until the safety bar **218** rides on top of the longitudinal segments **284**, **285** of the rods **282**, **283** of the center yoke **278**. Again referring to FIG. **58**, the latch disabler is activated prior to the stop **272** reaching the shaft **266**. This enables use of the cot **10** with an antler system having a lower profile, while still activating the latch disabler. With the safety bar **218** in the rotated position of FIG. **64**, the latch disabler is activated, thereby locking the retractable head section **197** in the extended position. The latch disabler will remain activated until the ambulance cot **10** is removed from the antler system **276**. As the ambulance cot **10** is pushed further forward, the fixed wheels **216** roll between the ears **288**, **289** and **293**, **294** of the center and forward yokes **278**, **280** and the into the antler system **276**.

It is to be noted that the longitudinal axis of the side rails **66** are inclined to the horizontal at an angle $\alpha$ (see FIG. **35**) that is in the range of 1 to 10°. In this embodiment, the preferred angle is in the range of 2 to 3°. Thus, when the retractable head section **197** is retracted, the load wheels **216** on the retractable frame of the head section **197** are lifted from the ground surface **217** thereby enabling the cot to roll in any direction on the four castered wheels **14**. This is referred to as the "no steer" condition. When the retractable head section **197** is extended to the position illustrated in FIG. **36**, the load wheels **216** will engage the support surface **217** to provide a steering effect for the cot as it is moved over the surface **217** (a "steer" condition). In this particular embodiment, the load wheels **216** are each rotatable about a fixed horizontal axis of rotation. That is, the wheels **216** are not supported in a castered manner. The head section **197** must be in the extended position of FIG. **36** in order to be steered into the ambulance for engagement with the antler system **276**.

## Folded Safety Bar

As is illustrated in FIG. **37**, the retractable head section **197** includes a safety bar **218**. The safety bar is configured to operatively engage a safety hook provided on the floor surface of a cargo area of an ambulance to prevent the cot from rolling completely out of the ambulance without an attendant being there to handle the head end of the cot. Reference is to be made to pending U.S. patent application Ser. No. 10/850,144, filed May 20, 2004, the subject matter of which is to be incorporated herein by reference. As is illustrated in FIGS. **44-46**, a modified safety bar **218A** can be provided which is foldable between the folded position illustrated in FIG. **45** and an unfolded position illustrated in FIG. **46**. That is, the safety bar **218A** includes two sections **219** and **221** interconnected by a pivot axle **222**. The safety bar sections **219** and **221** are approximately of the same length so that the pivot axle **222** is oriented at the midlength portion of the extended handle as is illustrated in FIG. **46**. Releasable locking pins **223** are provided to lock the handle sections **219** and **221** in the respective folded position (FIG. **45**) and the unfolded position (FIG. **46**). A push button release or removable pin or other means of release (not illustrated) is provided for facilitating an activation of the locking pins to unlock them and facilitate relative movement between the handle sections **219** and **221**.

## Accessories

FIGS. **50-56** illustrate two accessories that can, if desired, be incorporated on the ambulance cot **10**. The first accessory is depicted in FIGS. **50-51** and is a hook **239** oriented within the cot perimeter and which, specifically, is secured to the underside of the raisable and lowerable fowler **241** on the ambulance cot **10**. The hook **239** consists of a sheet of material formed into a J with the stem of the J being secured to a cross rail **242** on the underside of the fowler **241** and the hook part **243** of the J facing toward the head end (left end) of the cot as depicted in FIGS. **50-51**. The hook **239** facilitates the hanging of various articles therefrom while the cot is in use.

The second accessory is depicted in FIGS. **52-56** and is a collapsible pouch **244** secured to and extending between the legs **198**, **199** of the head section **197** as well as to and extending between the cross rail **201** on the head section and the cross rail **59** (FIG. **5**) on the litter frame **17**. As is shown in FIG. **54**, the pouch **244** consists of a planar sheet of fabric **237** to which are sewn plural fasteners **247** and **248** at spaced locations around the perimeter of the fabric sheet **246**. The fasteners **247** are looped around the cross rails **59** and **201** while the fasteners **248** are looped around the laterally space legs **198** on the head section. When the head section **197** is in the extended position shown in FIGS. **52** and **53**, the fabric

sheet **246** is stretched between the longitudinally spaced cross rails **59** and **201** and laterally spaced legs **198** so as to provide a support surface **249**. When the head section **197** is retracted to the position illustrated in FIGS. **55** and **56**, the cross rails **59** and **201** become closely adjacent one another and the fabric sheet **246** is collapsed in an accordion style therebetween.

## Operation

While the operative characteristics of the ambulance cot will be apparent to those skilled in the art upon reading the above set forth description and referring to the accompanying drawings, a discussion of the operational characteristics of the ambulance cot are set forth below for convenience.

When the ambulance cot is in the fully collapsed position, and referring to FIGS. **4** and **7**, an extension of the linear actuator **53** will cause a clockwise (FIG. **7**) rotation of the bracket **43** about the axis of the fastener **44**, the linear actuator being extended in the direction of the arrow **224**. The position of the fastener **44** (FIG. **4**) is determined by the fixed length linkage members **41**. As a result of this geometry, the amount of force in the direction of the arrow **224** is optimal and effects a rapid lifting of the litter **16** from the positions illustrated in FIGS. **3** and **4** through the mid-height position illustrated in FIG. **2** to the full height position of the litter illustrated in FIG. **1**. As the brackets **43** are lifted with continued extension of the linear actuator **53**, the further X frame members **32, 33, 36** and **37** will telescope outwardly to accommodate the changing height of the frame members **22** and **23** from the base **11**. In this particular embodiment, the pivot axle **24** for the two brackets **43** extend through the respective X frame members **22, 23** and **32, 33**. As a result, it is necessary to provide an elongate slot in each of the further X frame members **26, 27** and **36, 37** in order to accommodate the presence of the pivot axle **24**. It is to be recognized that a placement of the pivot axle **24** can be oriented at a location on the bracket **43** which will make it unnecessary to provide an axle receiving hole in each of the X frame members **23** and **33** as well as the elongate slots in the further X frame members **27** and **37**. This provides an advantage of increased strength and stiffness of the base. When the litter **16** is lowered to the position illustrated in FIG. **3**, mounts **226** (FIG. **1**) will operatively engage a cross rail provided on the underside of the litter **16** and additional mounts **227** will rest on the cross rail **13** on the base. The mounts **226** and **227** are oriented so that they are not readily accessible by attendants in the region of the ambulance cot and, therefore, pinching issues are avoided.

Referring to FIG. **11**, each push button switch **84, 86** on the foot end lift handle assembly **72** requires two sets of switch contacts to be engaged in order to effect the desired command. That is, the set of contacts **228, 229** must both be closed in order to effect, for example, a retraction of the reciprocal rod **56** into the cylinder housing **54**. Similarly, the two sets of contacts **231** and **232** of the switch **86** will effect an extension of the reciprocal rod **56** from the cylinder housing **54**.

Turning now to FIGS. **17-25**, the hydraulic circuit operation will now be described. Assuming the ambulance cot is in an ambulance and is now in the process of being removed from the ambulance, it is necessary to deploy the base from the position illustrated in FIG. **3** to the position illustrated in FIG. **1** and as taught in WO 2004/064698. Normally, the control **158** is in what is referred to as the "sleep" mode. Once a command is presented, such as by depressing the switch **86** to close the contacts **231** and **232**, such action is noted by the control **158** to effect a powering up of the circuit to effect an opening of the valve **137** (Valve A) to shift the valve from its FIG. **17** position to the FIG. **18** position. The control will also make inquiry concerning whether the high top sensors **166** and **167** have been detected (see FIG. **25**) and, if not, the electric motor **122** is ramped in to effect a driving of the hydraulic pump **124**. As soon as the motor reaches its maximum speed, the motor is continued to operate driving the pump at maximum speed until the sensor **167** is detected at which time the speed of the motor is ramped down or gradually slowed until the high top sensor **166** is detected, at which time the motor is brought to a stop. If the contacts **231** and **232** remain closed, the motor will remain stopped until the button **86** has been released by the attendant. Rapid uncontrolled deployment of the base from the FIG. **3** position to the FIG. **1** position is prevented by the orifice **136** in the valve **134** (Valve F). The attendant can thereafter "jog" the litter further upwardly by pressing the switch. In this case, the controller will activate the motor for a short interval of time, allowing incremental upward movement of the litter.

FIG. **19** illustrates a lowering of the litter from the FIG. **1** position toward the FIG. **3** position. In this instance, the switch **84** is actuated to close the contacts **228** and **229** to cause an opening of the valve **146** (Valve B). It will be noted that fluid flows out of the closed end of the linear actuator **53** through the pressure compensated flow control valve **143**, through the check valve **144**, through the opened Valve B to tank **141**. The hydraulic fluid enters the rod end of the linear actuator **53** by sucking same out of the tank **141** through a check valve **153**. In this particular situation, operation of the motor **122** is not required and hence is not activated. If the litter of the ambulance cot is lifted (no weight on the base of the ambulance cot), the pressure switch **159** will detect the lifting by reason of a reduced pressure and as long as the switch **84** and the contacts **228** and **229** thereof remain closed, the motor **122** will be activated and driven in the opposite direction of rotation to effect a rapid driving of fluid into the rod end of the linear actuator **53** to rapidly collapse the cot. Prior to this occurring, however, the Valve B will be returned to its initial position illustrated in FIG. **17** as will Valve A. Alternatively, a separate switch (not shown) can be provided for effecting the same rapid collapse of the cot. Since less hydraulic fluid is required in the rod end of the linear actuator **53** by reason of the presence of the reciprocal rod **56** than is required at the opposite end of the cylinder housing **54**, excess fluid will need to be bled from the closed end of the cylinder housing and this is accomplished through the high pressure side of the pump feeding a pressurized signal to open the check valve **133** and the check valve **139** to facilitate a bleeding of some of the hydraulic fluid to tank during the time that the base frame **11** is rapidly raised by the hydraulic circuit. Once the low position sensor is detected, the speed of the motor is gradually reduced until the lowermost sensor **164** is detected at which time the motor is brought to a halt. If the push button switch **84** remains activated, the motor will remain stopped until the attendant releases the manual engagement of the button **84**. The attendant can thereafter "jog" the litter further downwardly by pressing the switch. In this case, the controller will activate the motor for a short interval of time, allowing incremental downward movement of the litter.

The operative characteristics illustrated in FIG. **21** are similar to those depicted in FIG. **18**. Even when the motor **122** is activated to drive the pump **124**, the orifice or throttle **136** limits the amount of fluid that can be driven so that the base unit does not uncontrollably fall away from the litter when it is being lifted by the ambulance attendants.

In the situation where there is a loss of electrical function, it must be possible to operate the ambulance cot manually. In addition, a weep valve **233** is provided at the rod end of the cylinder housing **54** to cause a pressure relief to occur when the rod is fully extended. That is, hydraulic fluid inside the cylinder housing **54** will communicate with the outlet **127** to limit the pressure buildup inside the cylinder housing **54**. In view of the construction of the valves **151** and **157**, with weight on the cot **10**, the handle **103** and the valve **157** are allowed to operate, as FIGS. **12-14** and FIG. **29** indicate. Since the pressure is high in the chamber **181** of the valve **151**,

the valve **151** will not shift (as shown in FIG. **29**) in response to an operative movement of the handle **103** and the litter **16** of the cot **10** will not lower. On the other hand, when weight on the litter **16** is removed by the attendant or plural attendants lifting the litter **16** away from the base frame **11**, the hydraulic pressure in the chamber **181** of the valve **151** is reduced to facilitate an easy movement of the land **186** and the valve seat surface **187** thereon (FIG. **31**) away from the valve seat surface **188** in order to facilitate the operation of the valve **151** simultaneously with the valve **157** (FIGS. **28-30**, particularly FIG. **30**). That is, fluid flows from the closed end of the linear actuator **53** to tank through the valve **151** whereas hydraulic fluid is siphoned from the tank **141** into the rod end of the linear actuator **53** to effect a lowering of the litter **16** relative to the base frame **11**. Similarly, and assuming that electrical function has still been disrupted and it is desired to deploy the base from the FIG. **3** position to the FIG. **1** position, the attendants will need to lift the cot while simultaneously operating the handle **103** causing the weight of the base frame **11** to effect a drawing of fluid from the tank into the closed end of the linear actuator **53** while the hydraulic fluid in the rod end of the linear actuator **53** extends through the open valve **157** to tank.

Although particular preferred embodiments of the invention have been disclosed in detail for illustrative purposes, it will be recognized that variations or modifications of the disclosed apparatus, including the rearrangement of parts, lie within the scope of the present invention.

What is claimed is:

1. An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said base frame and said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first crosswise member, and wherein said litter frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. The ambulance cot according to claim 1, wherein said first and second mounts each engage and rest upon respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to respectively engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

4. The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said base frame.

5. An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to respectively engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

6. The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said litter frame.

* * * * *

(57) **ABSTRACT**

An ambulance cot is disclosed and the ambulance cot has, if desired, a wheel supported base and a litter raisable and lowerable by a powered elevating mechanism oriented between the base and the litter. The ambulance cot also has wireless communication capability to facilitate communication between the ambulance cot and a loading system on an ambulance as well as facilitating wireless troubleshooting via a handheld wireless unit. The ambulance cot also has a longitudinally extendable head section. The ambulance cot also has several accessories, such as an accessory hook mounted to the underside of the fowler, and a collapsible pouch accessory fastened to the retractable head section and the litter frame as well as a pinch safety feature.

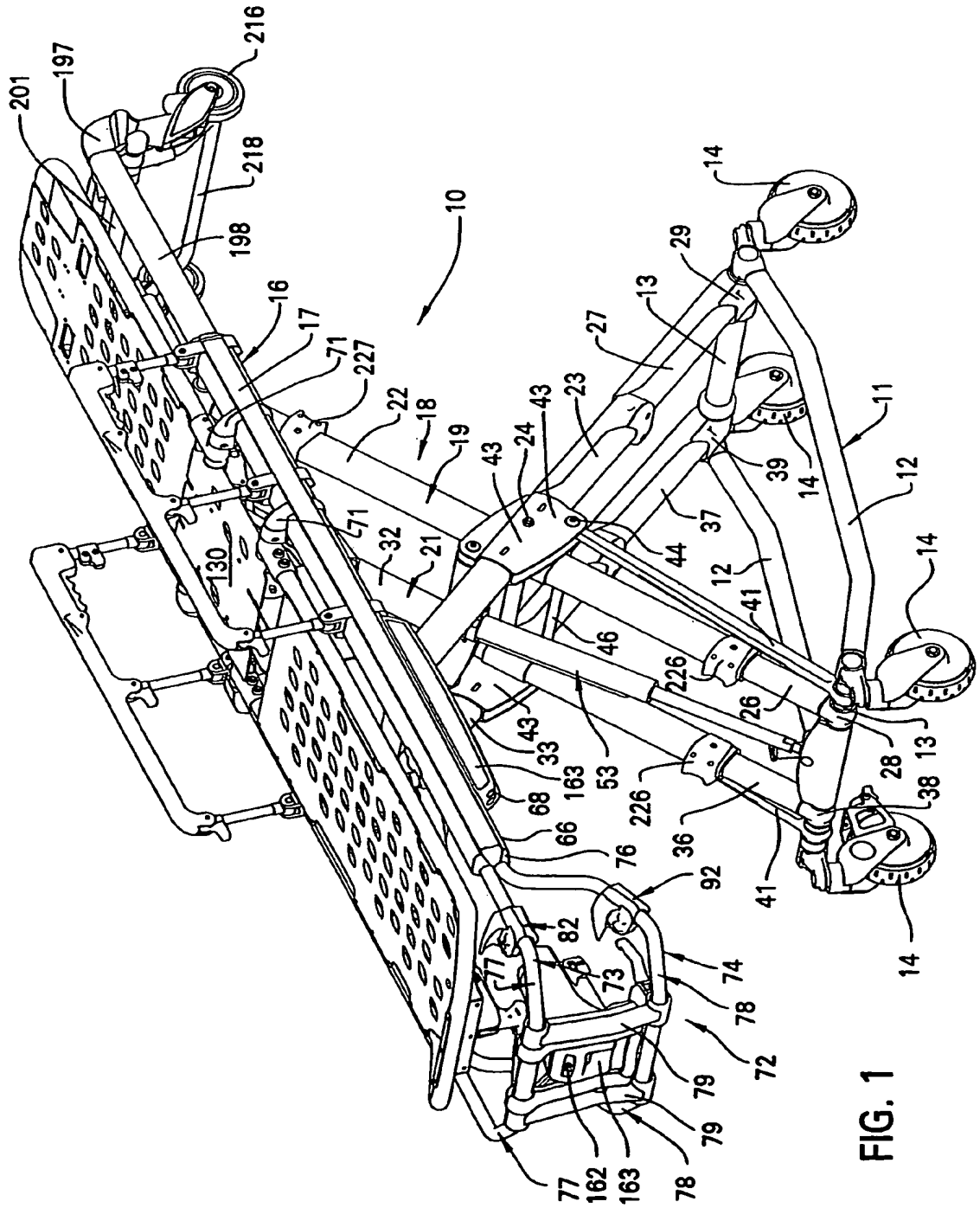

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FIG. 1

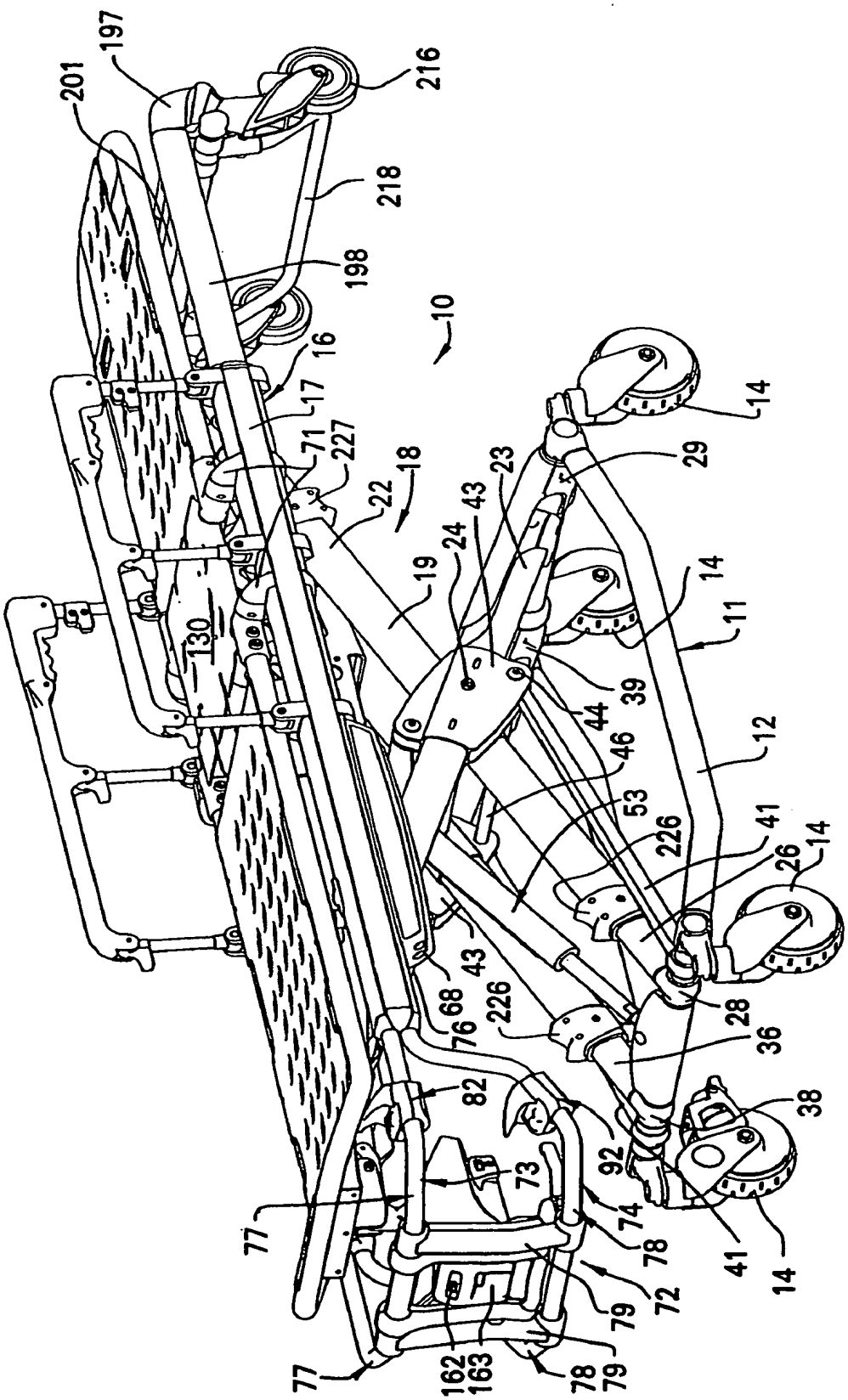

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FIG. 2

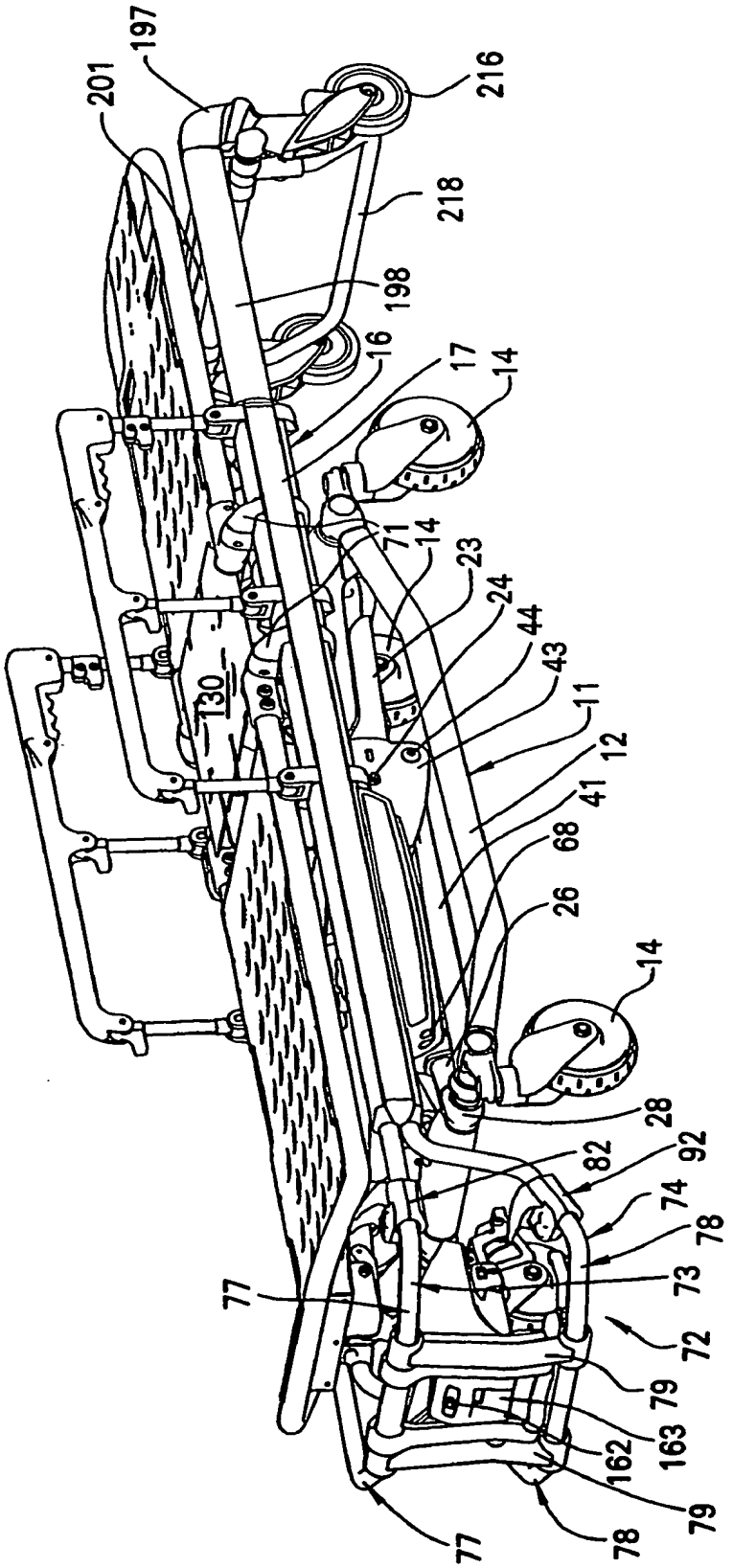

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FIG. 3

FIG. 15

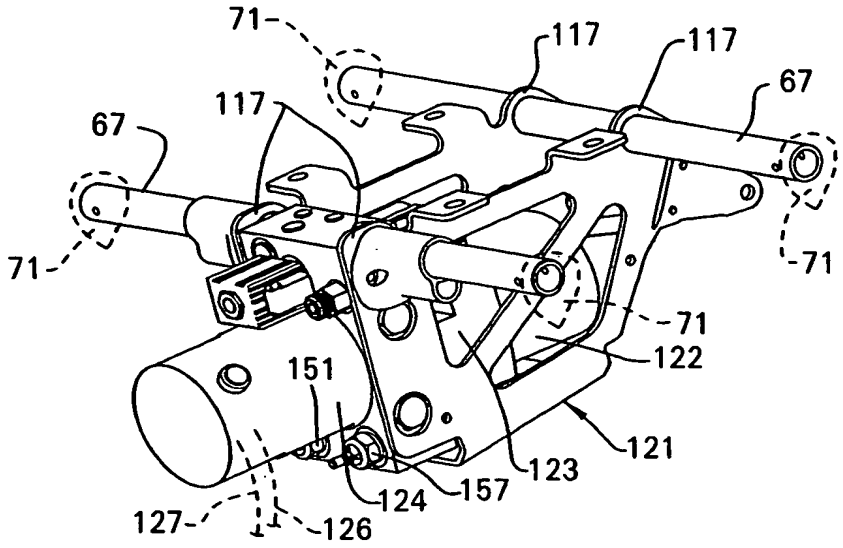
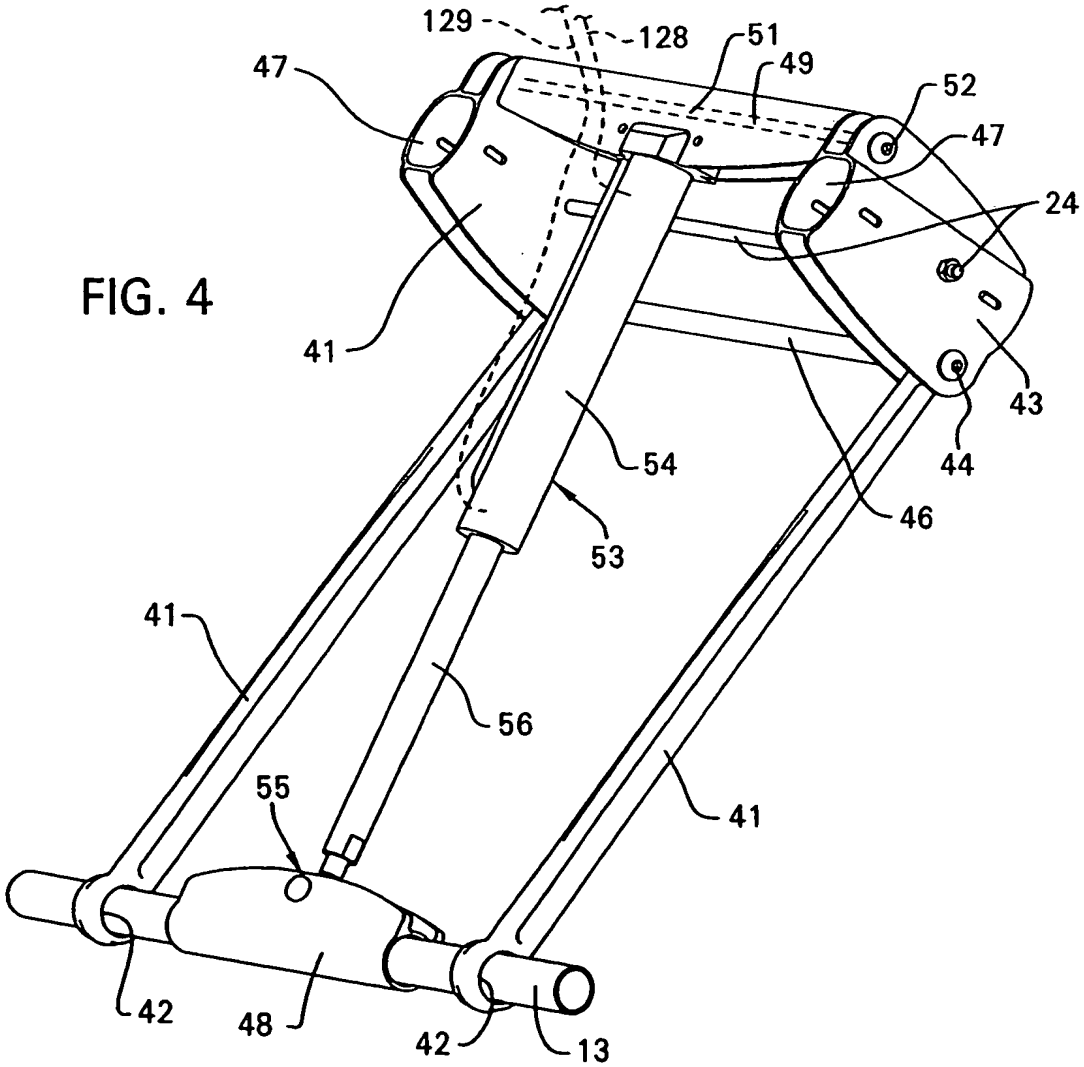

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FIG. 4


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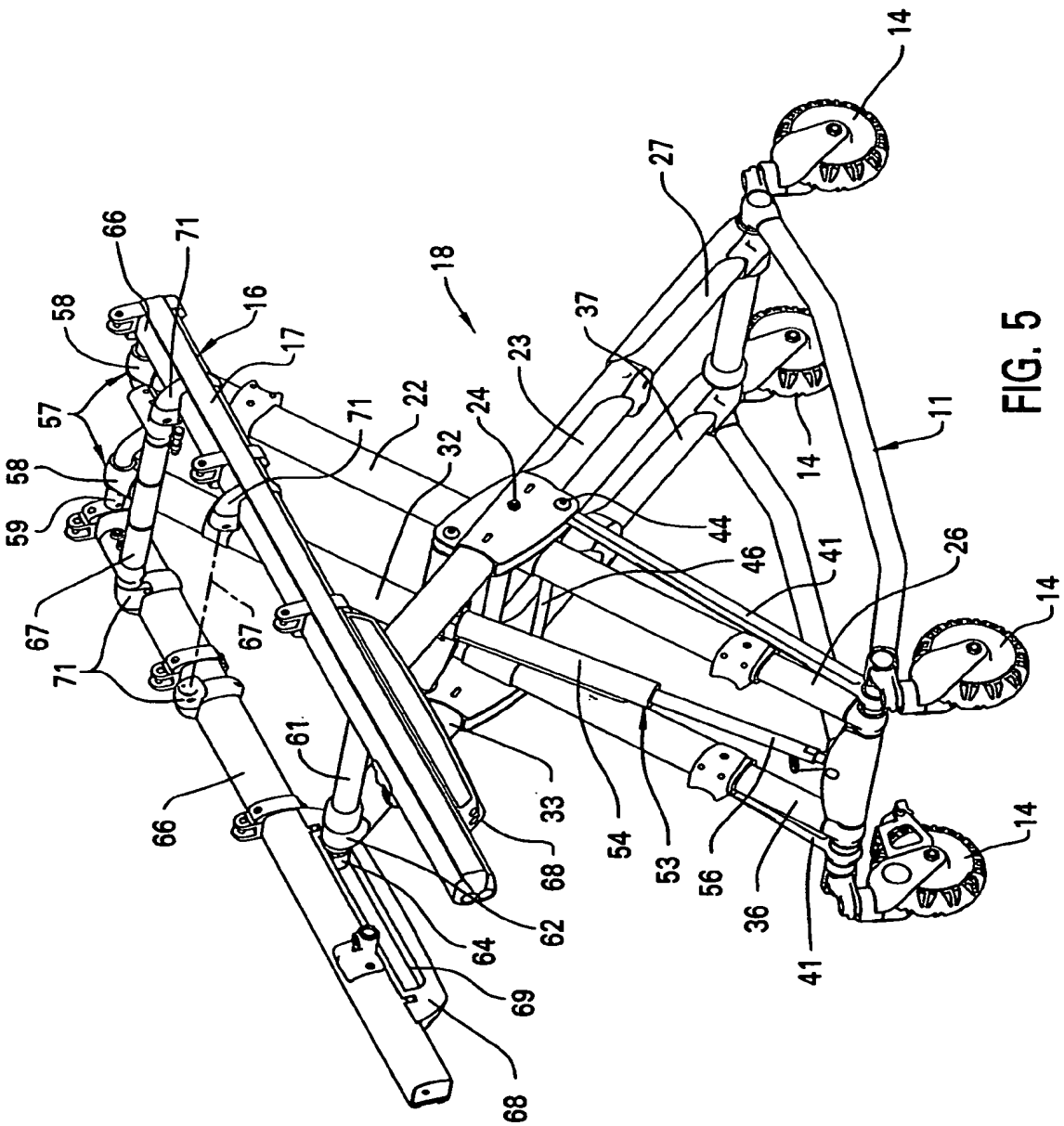

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FIG. 5

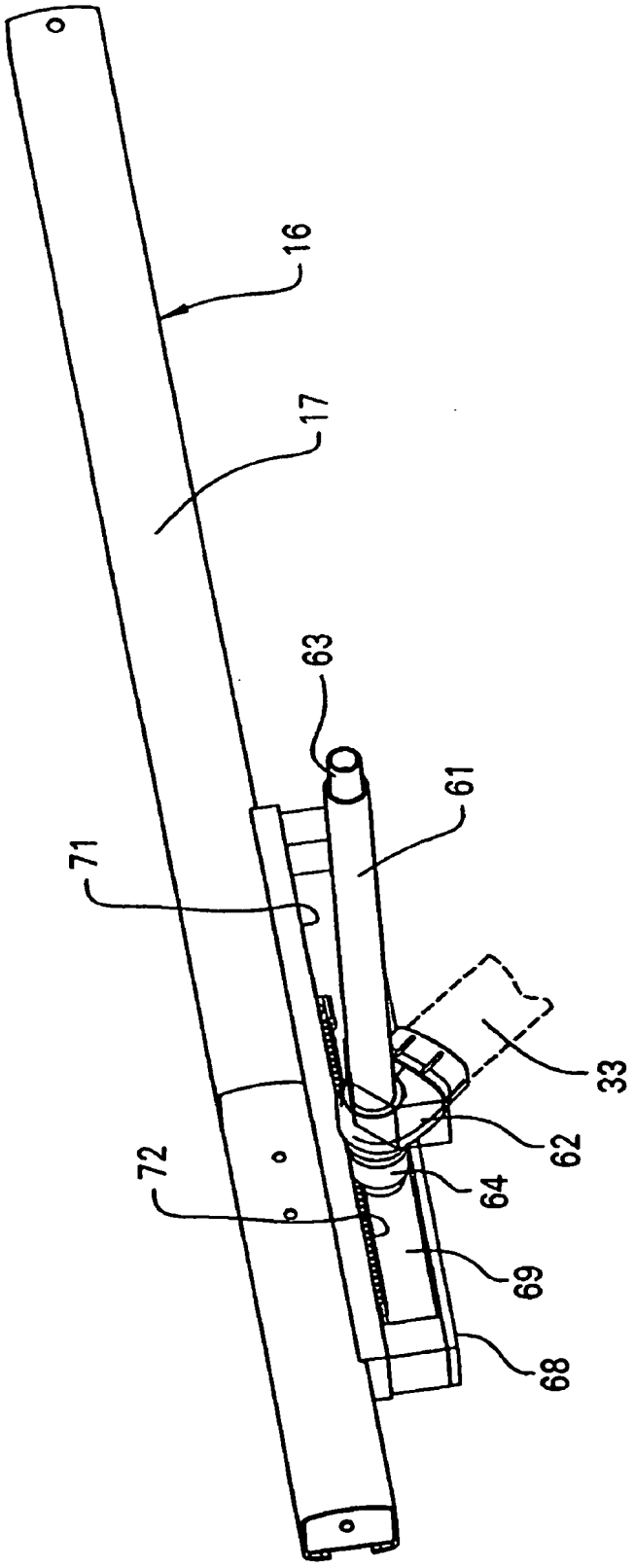



FIG.6

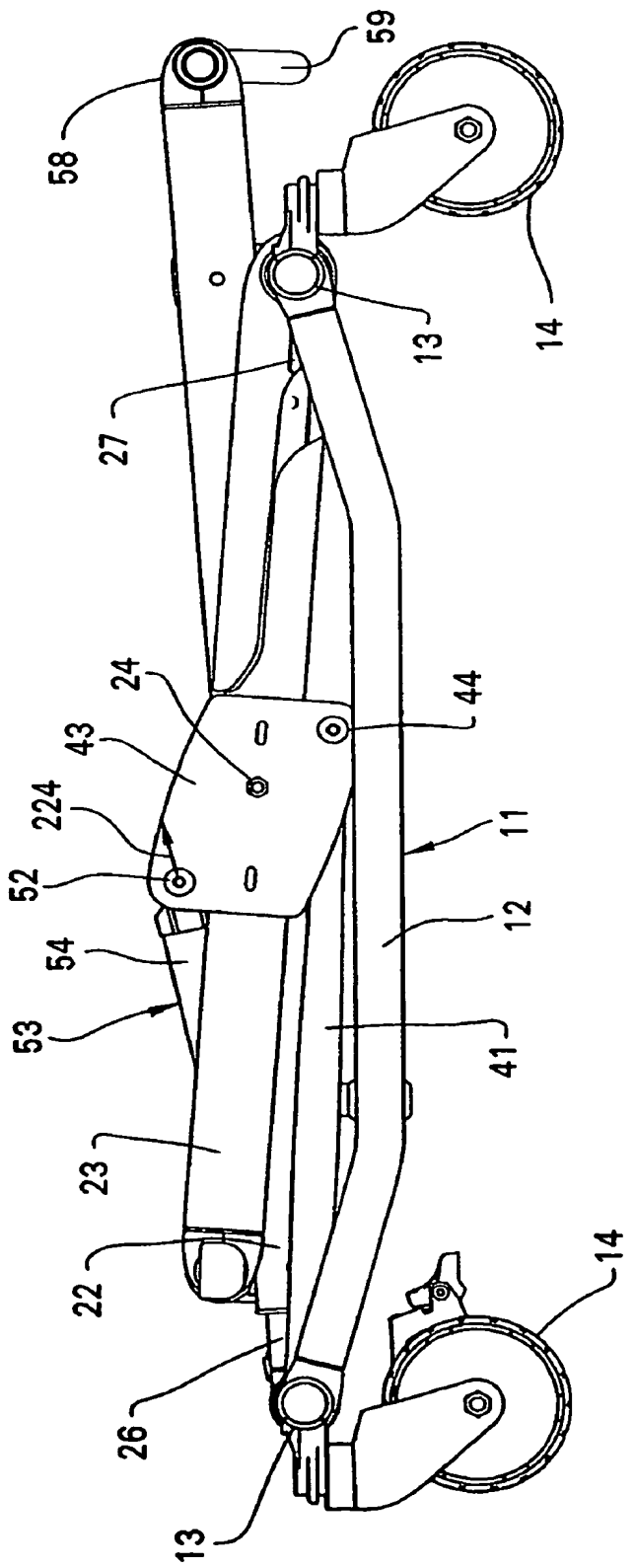



FIG. 7

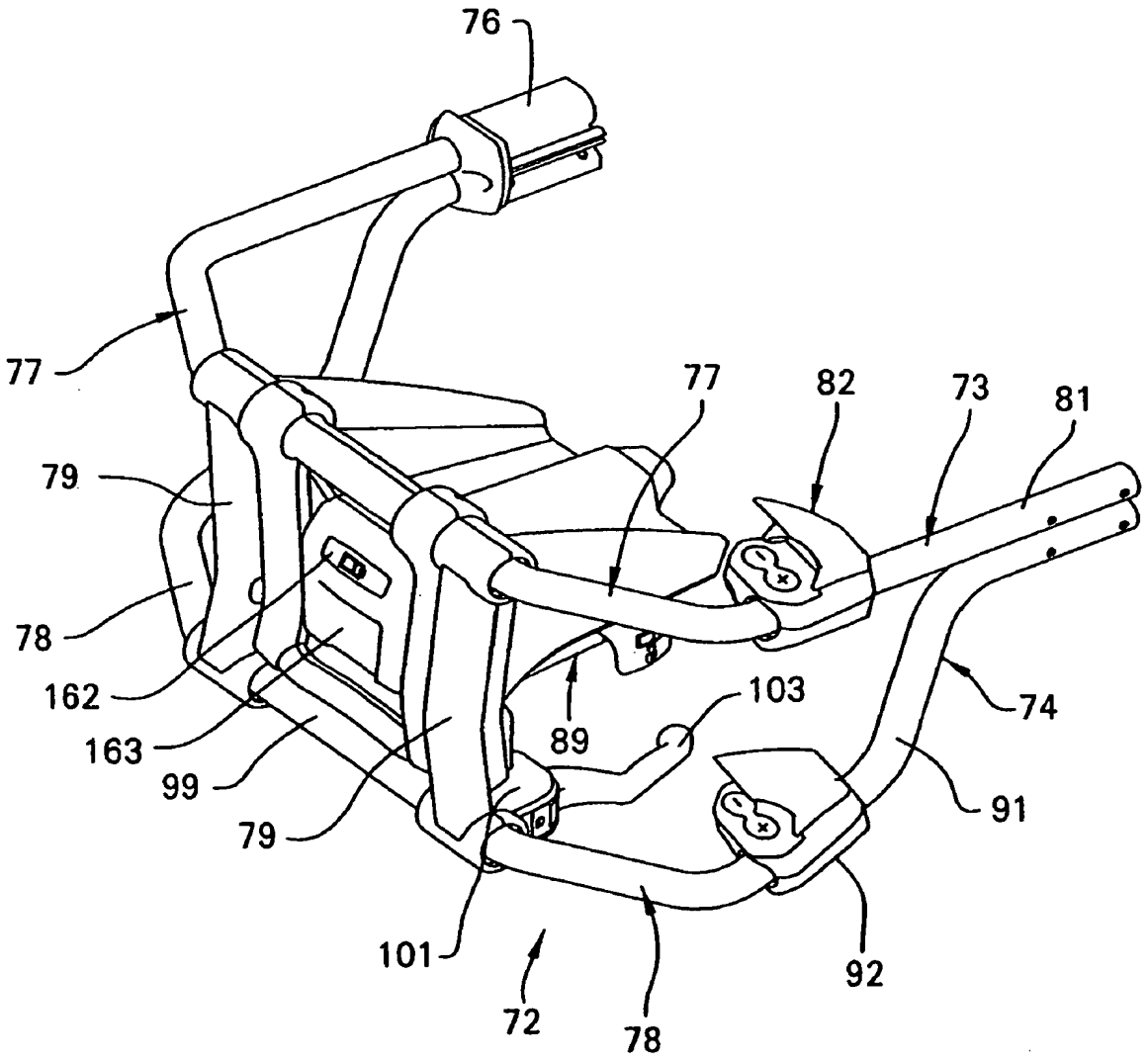



FIG. 8

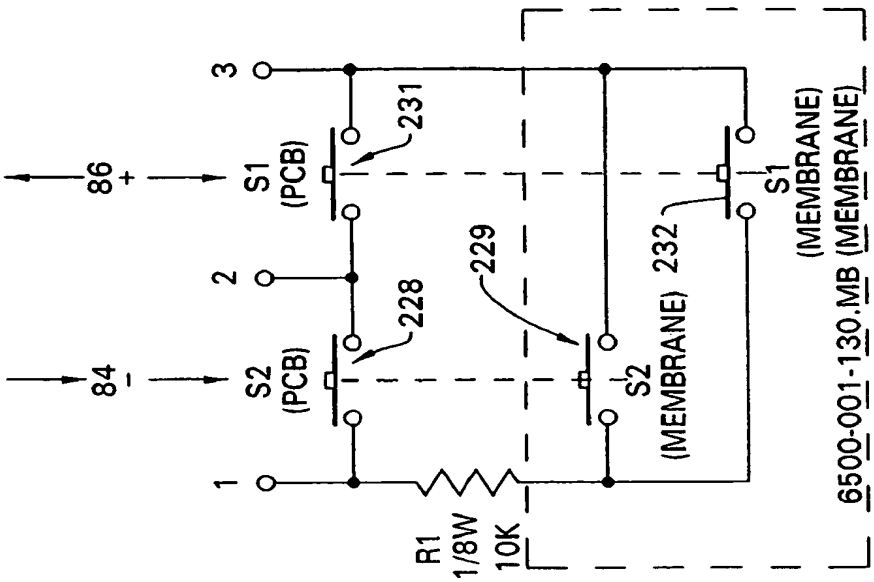

3
2
1
86
84
+
-
S1 (PCB)
S2 (PCB)
231
228
229
232
S1 (MEMBRANE)
S2 (MEMBRANE)
R1 1/8W 10K
6500-001-130.MB (MEMBRANE)

FIG. 11

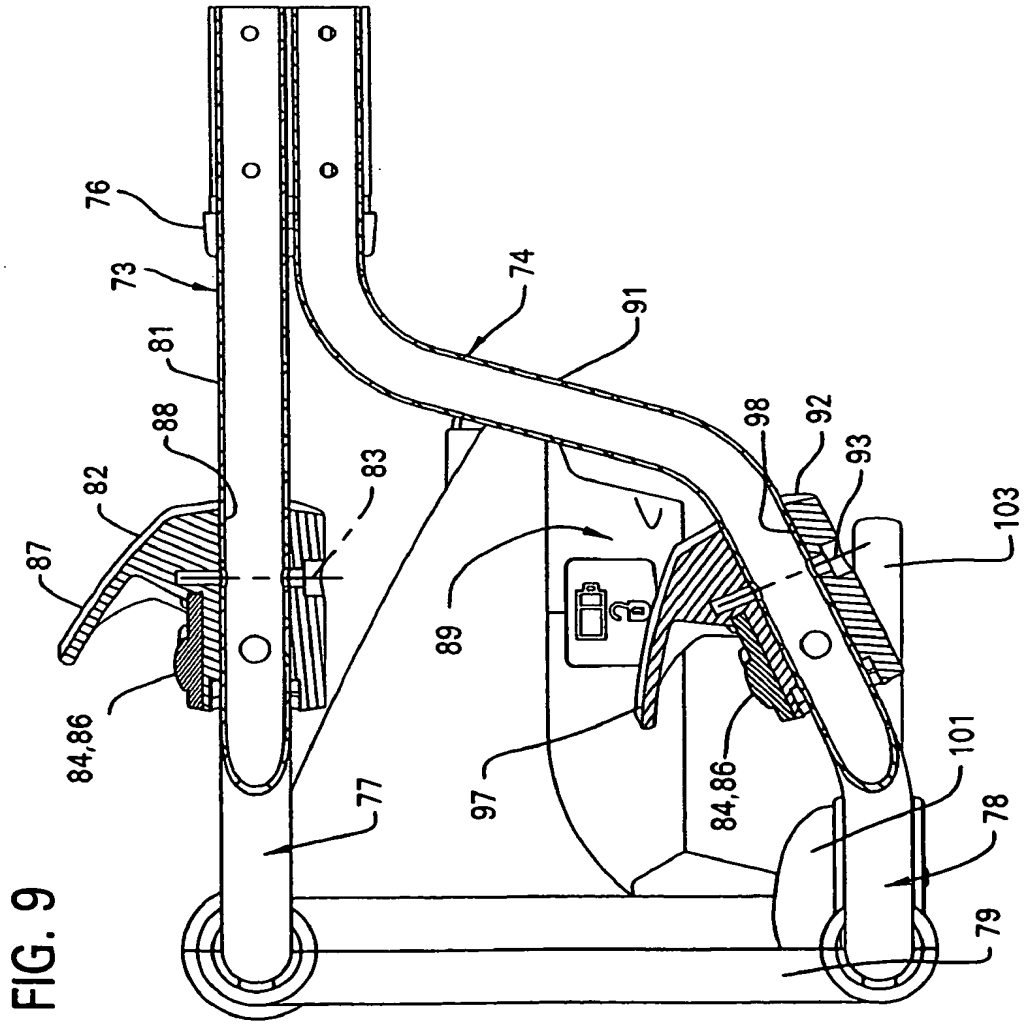

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FIG. 9

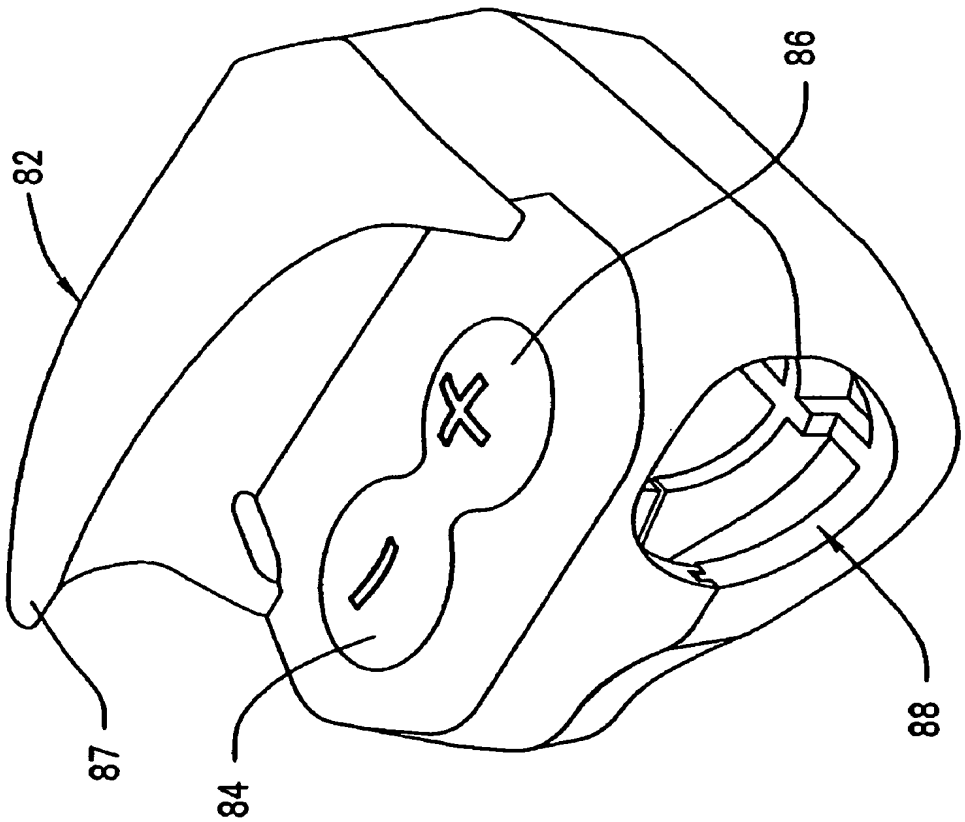



FIG. 10

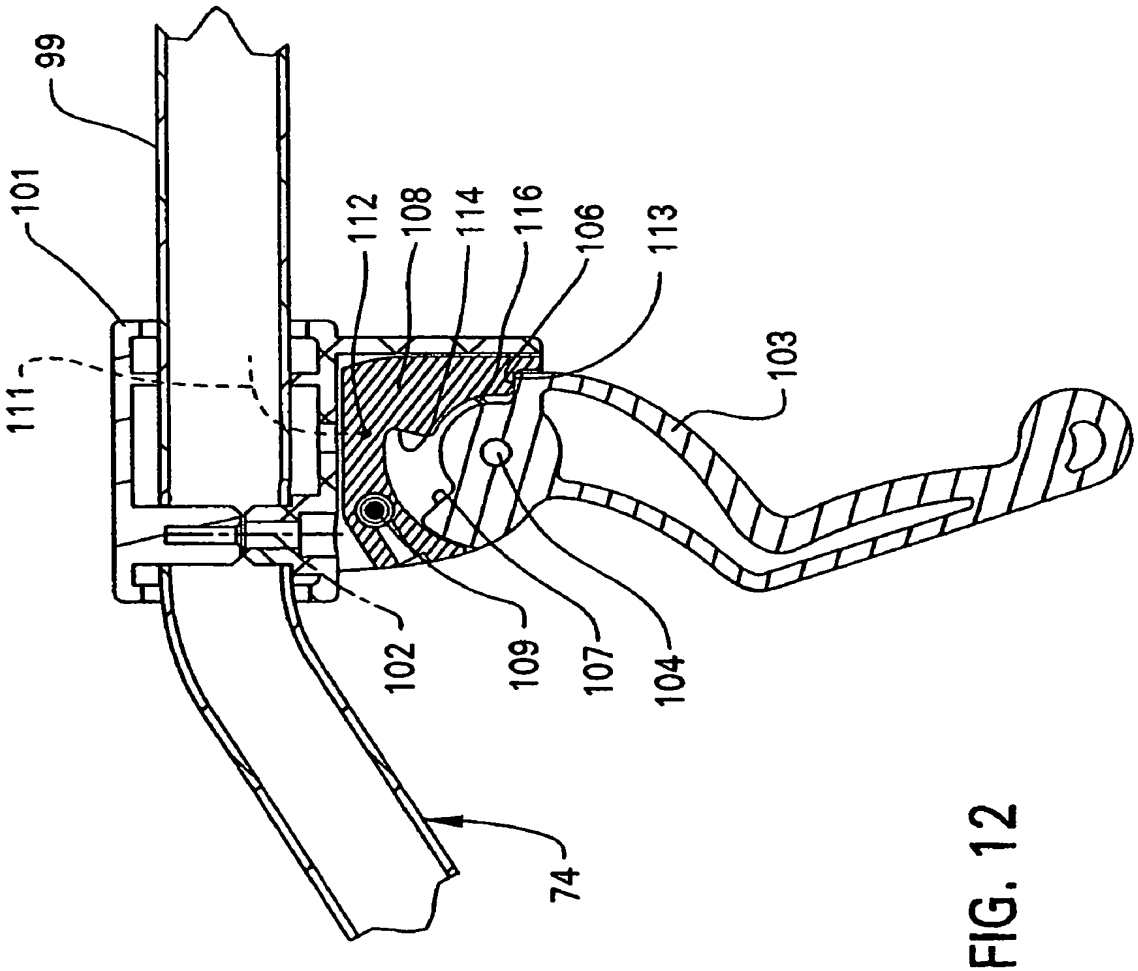



FIG. 12

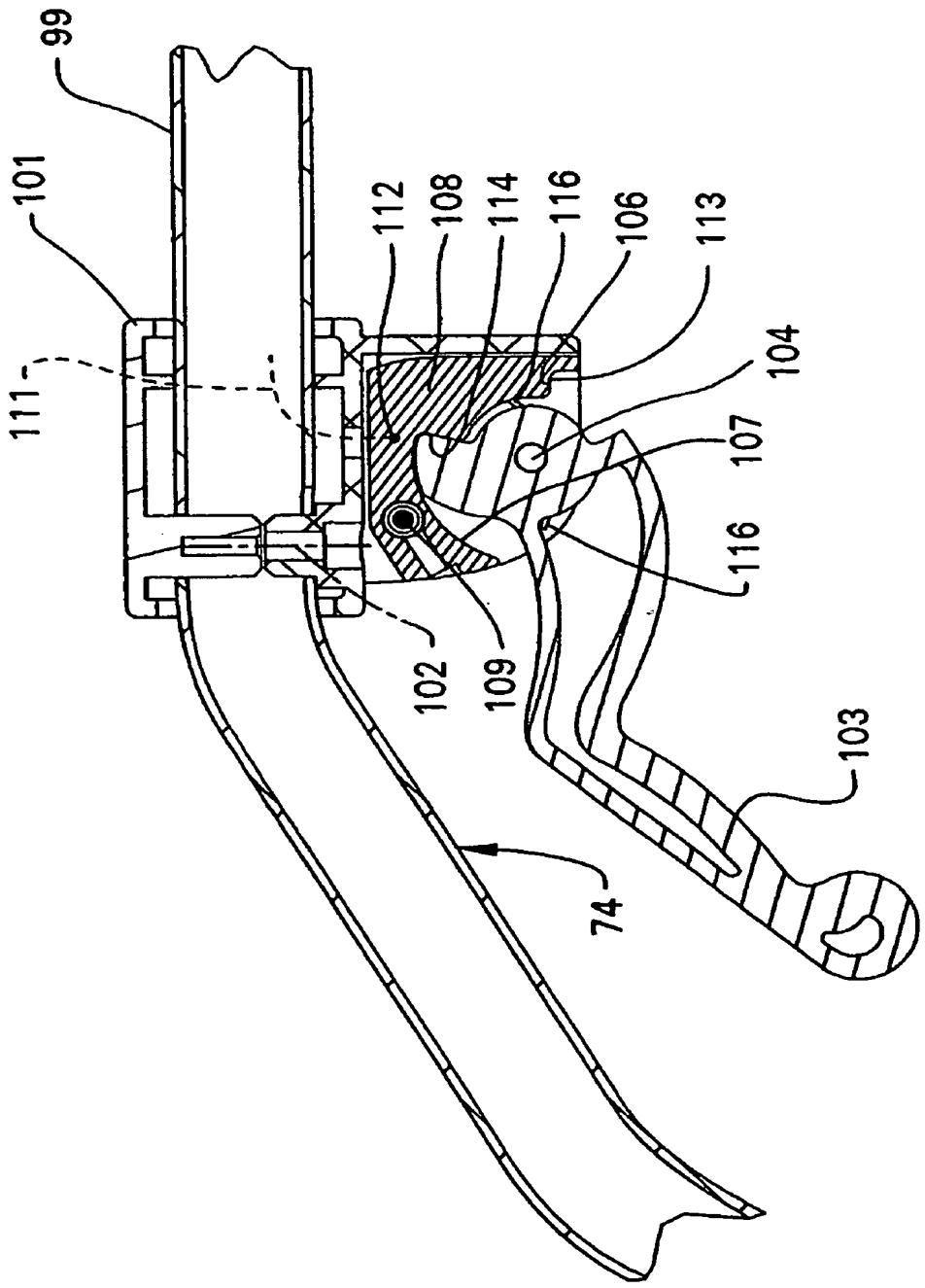



FIG. 13

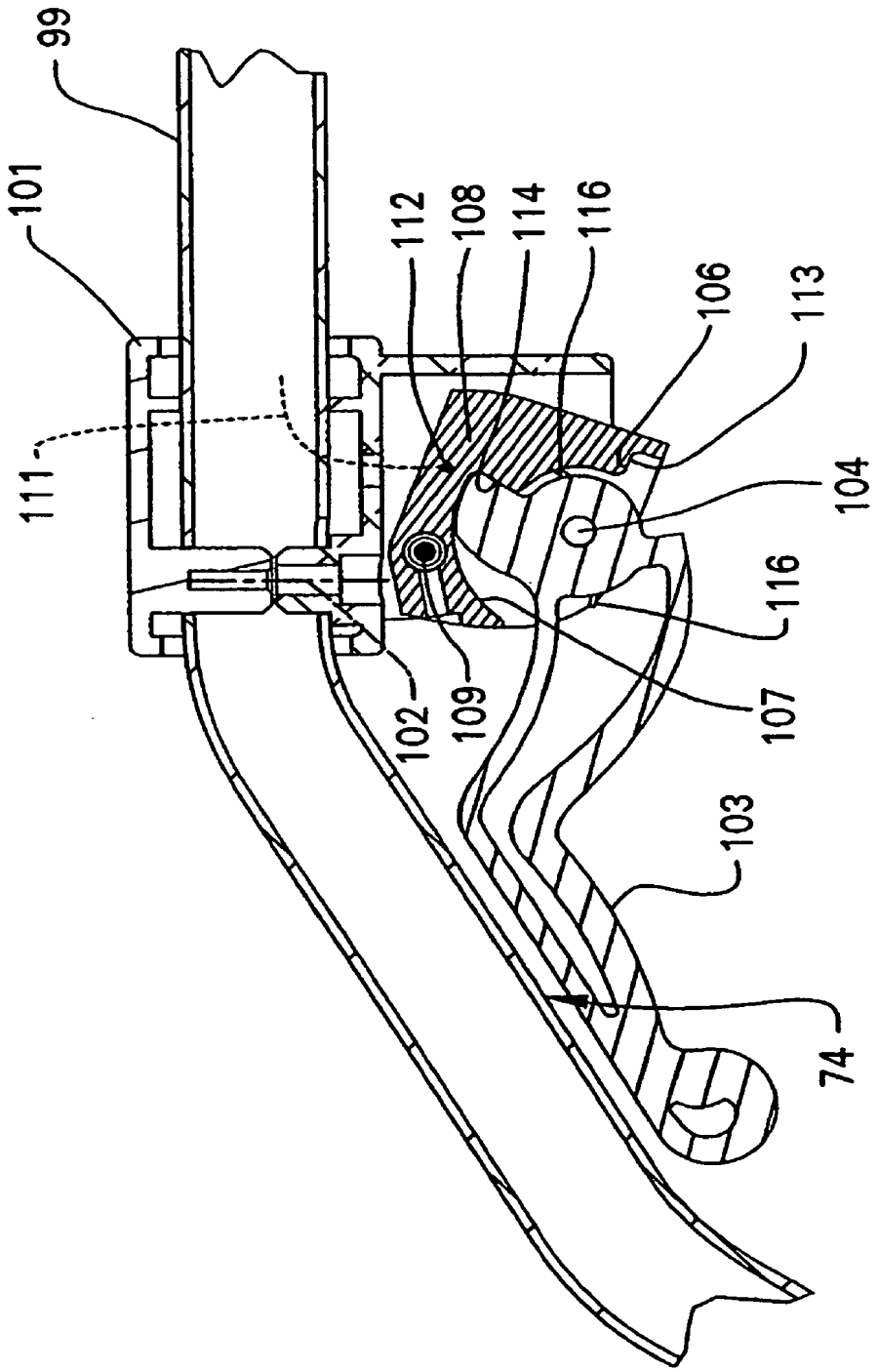



FIG. 14

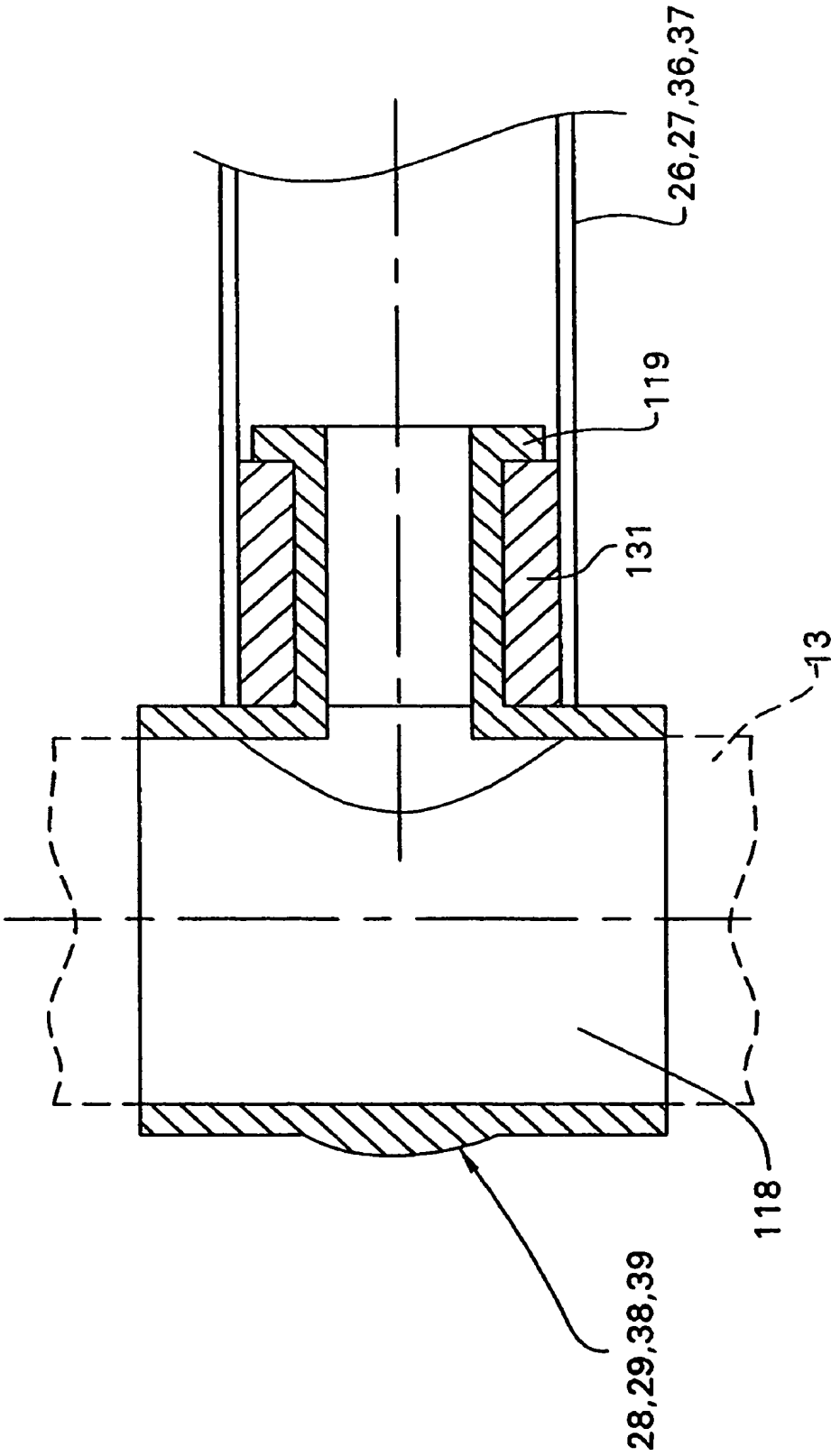



FIG. 16

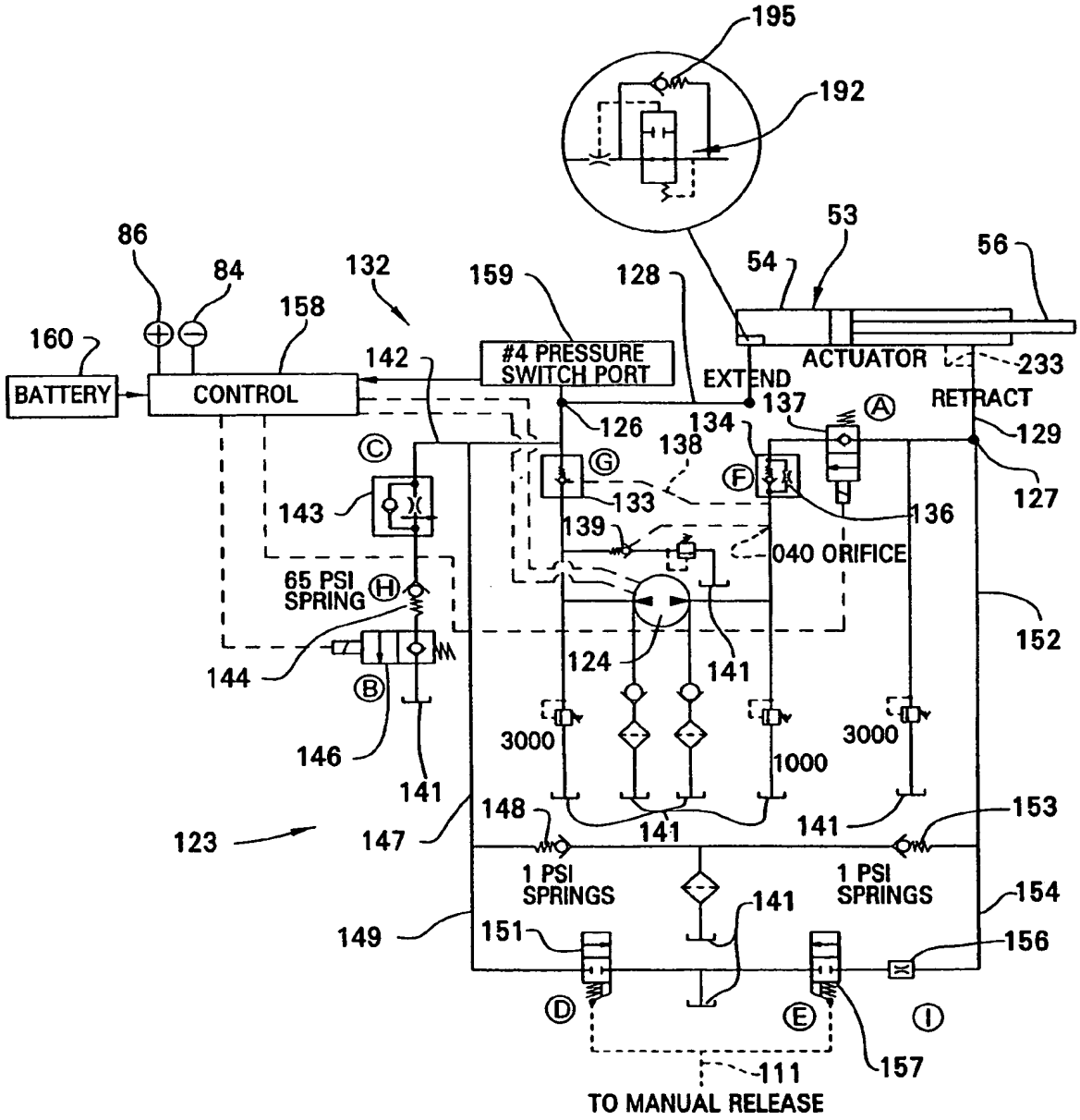

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142
#4 PRESSURE SWITCH PORT
EXTEND
ACTUATOR
233
BATTERY
CONTROL
137
RETRACT
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040 ORIFICE
65 PSI SPRING
152
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124
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146
3000
1000
3000
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153
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1 PSI SPRINGS
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TO MANUAL RELEASE

FIG. 17

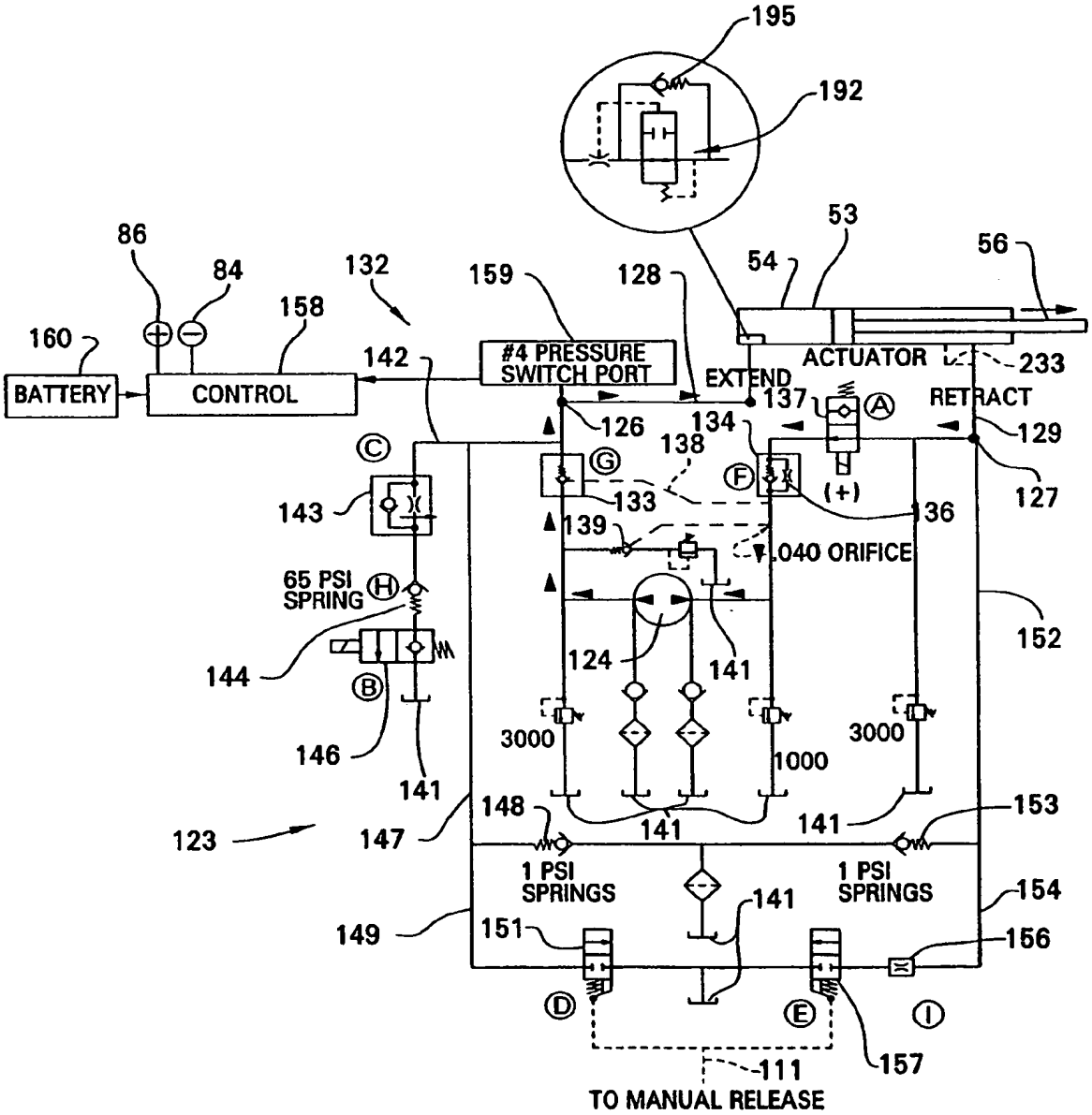

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TO MANUAL RELEASE

FIG. 18

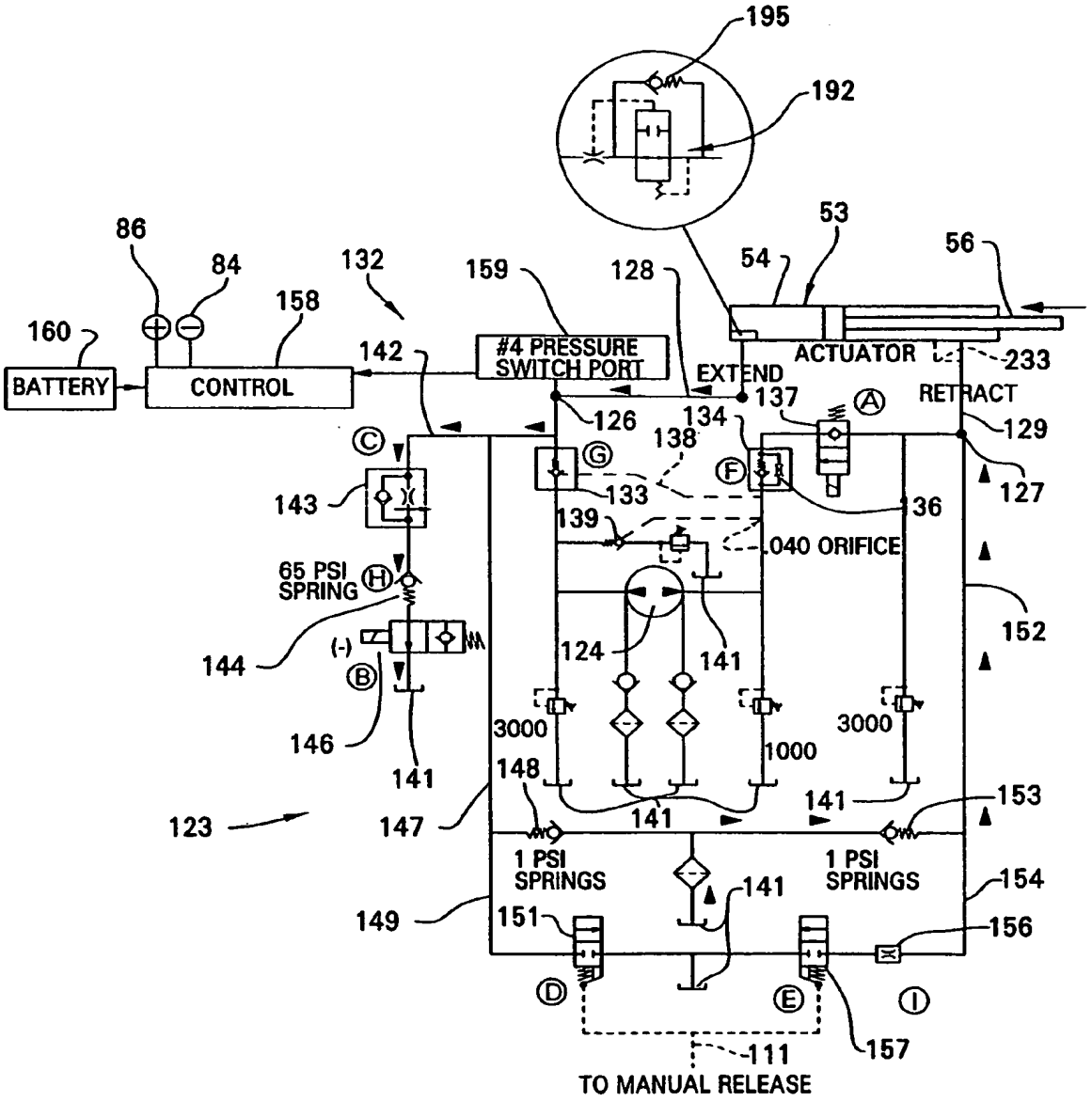

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#4 PRESSURE SWITCH PORT
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TO MANUAL RELEASE

FIG. 19

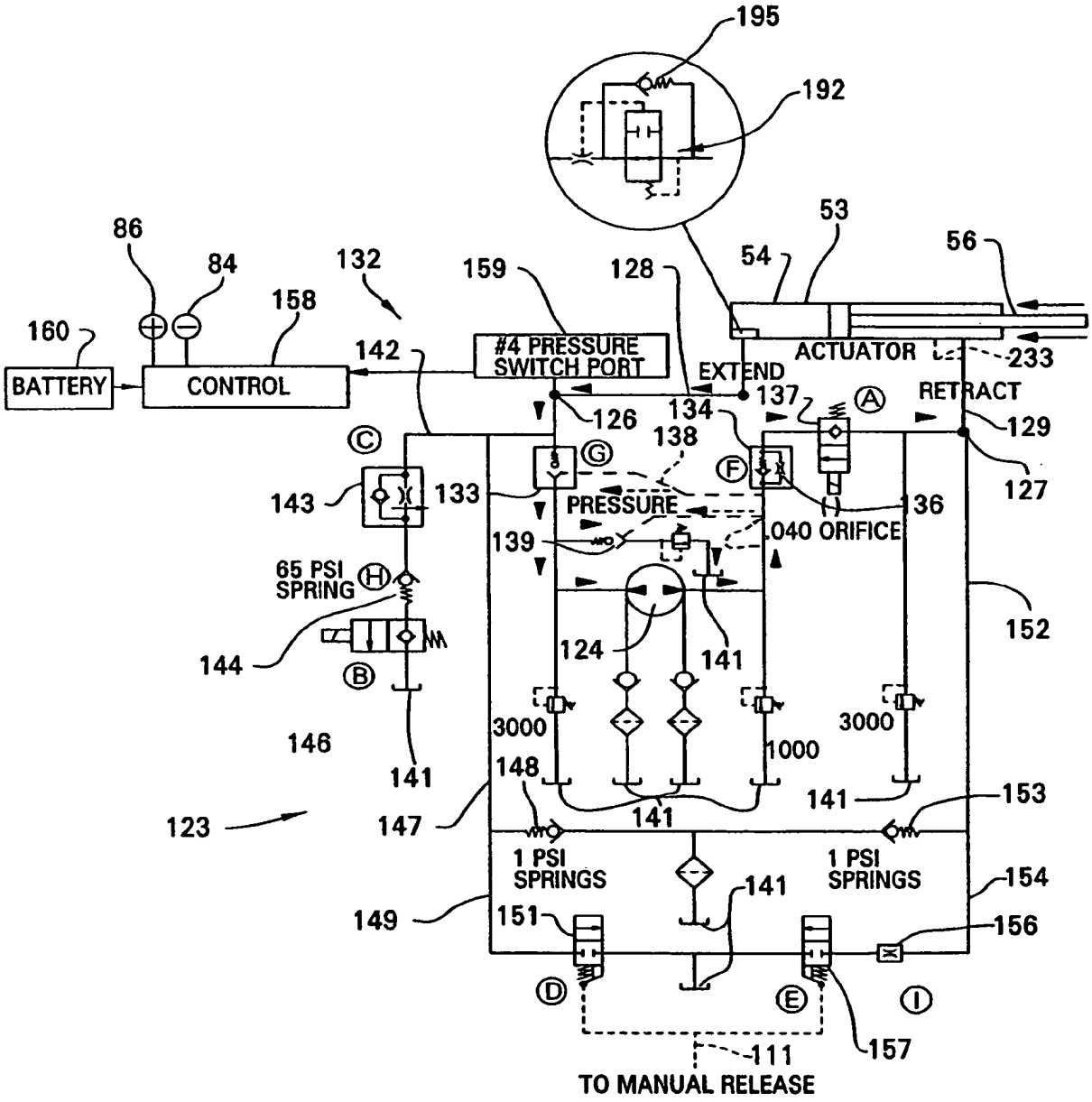

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PRESSURE
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040 ORIFICE
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TO MANUAL RELEASE

FIG. 20

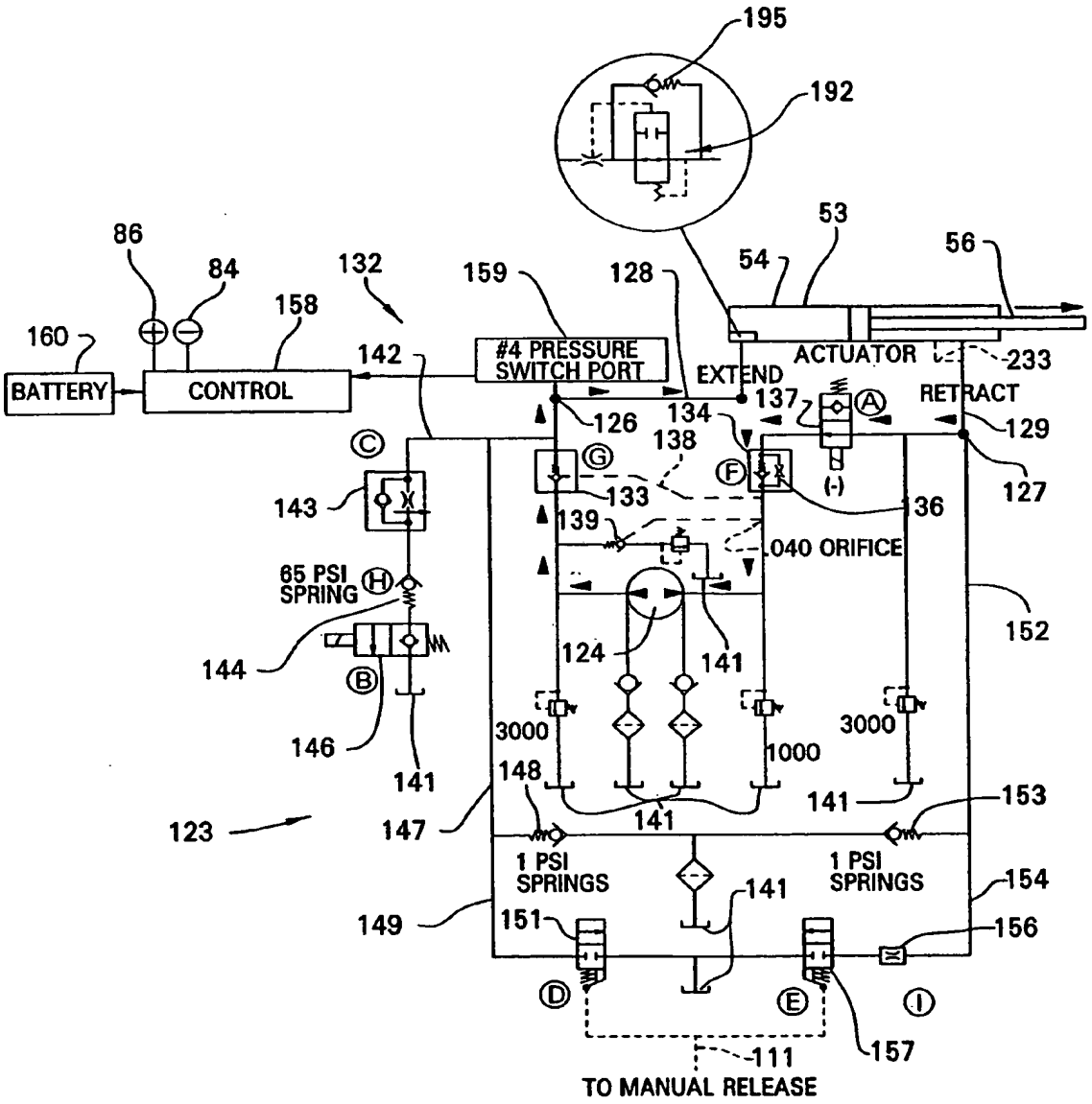

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TO MANUAL RELEASE

FIG. 21

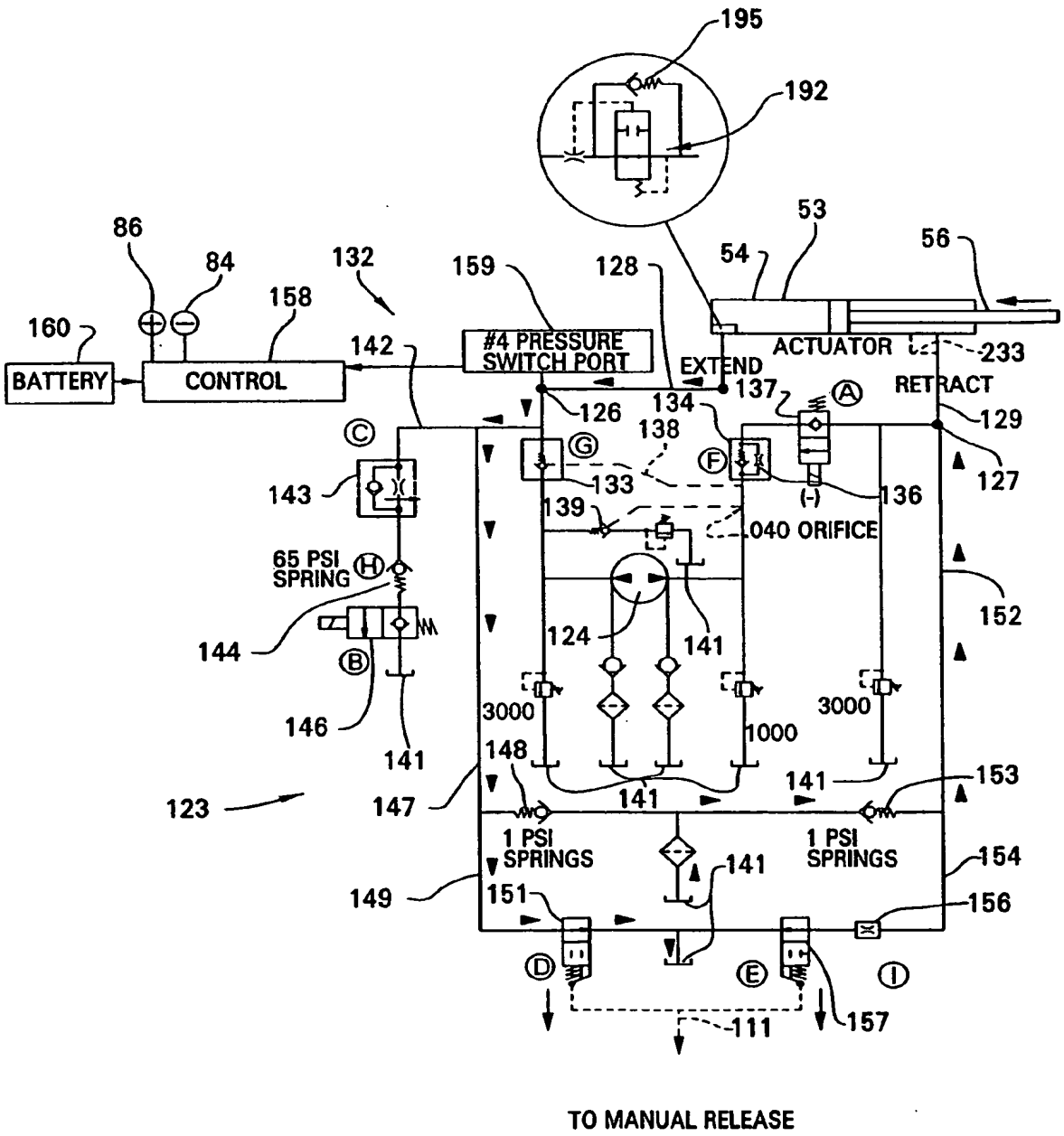

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TO MANUAL RELEASE

FIG. 22

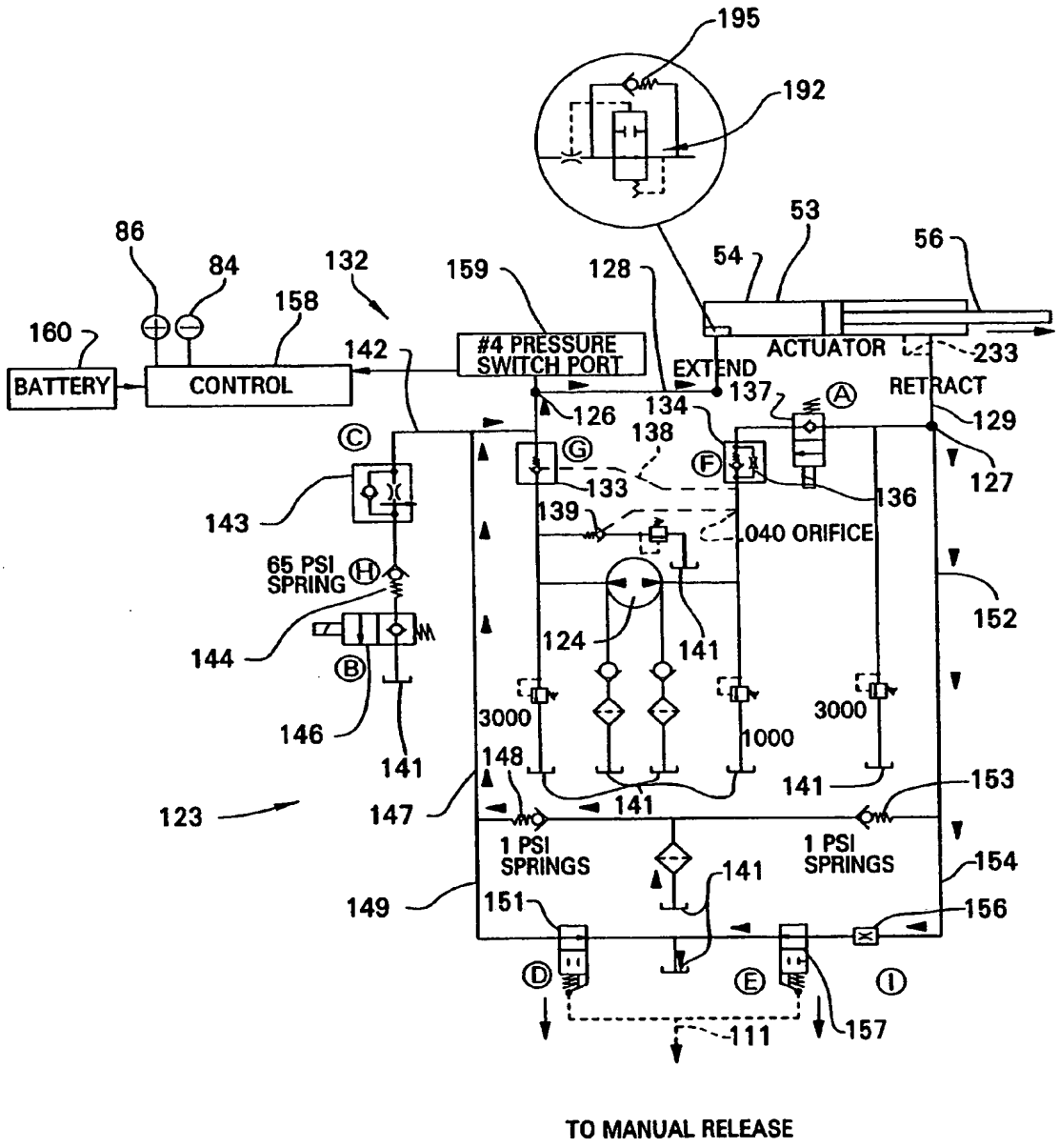

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TO MANUAL RELEASE

FIG. 23

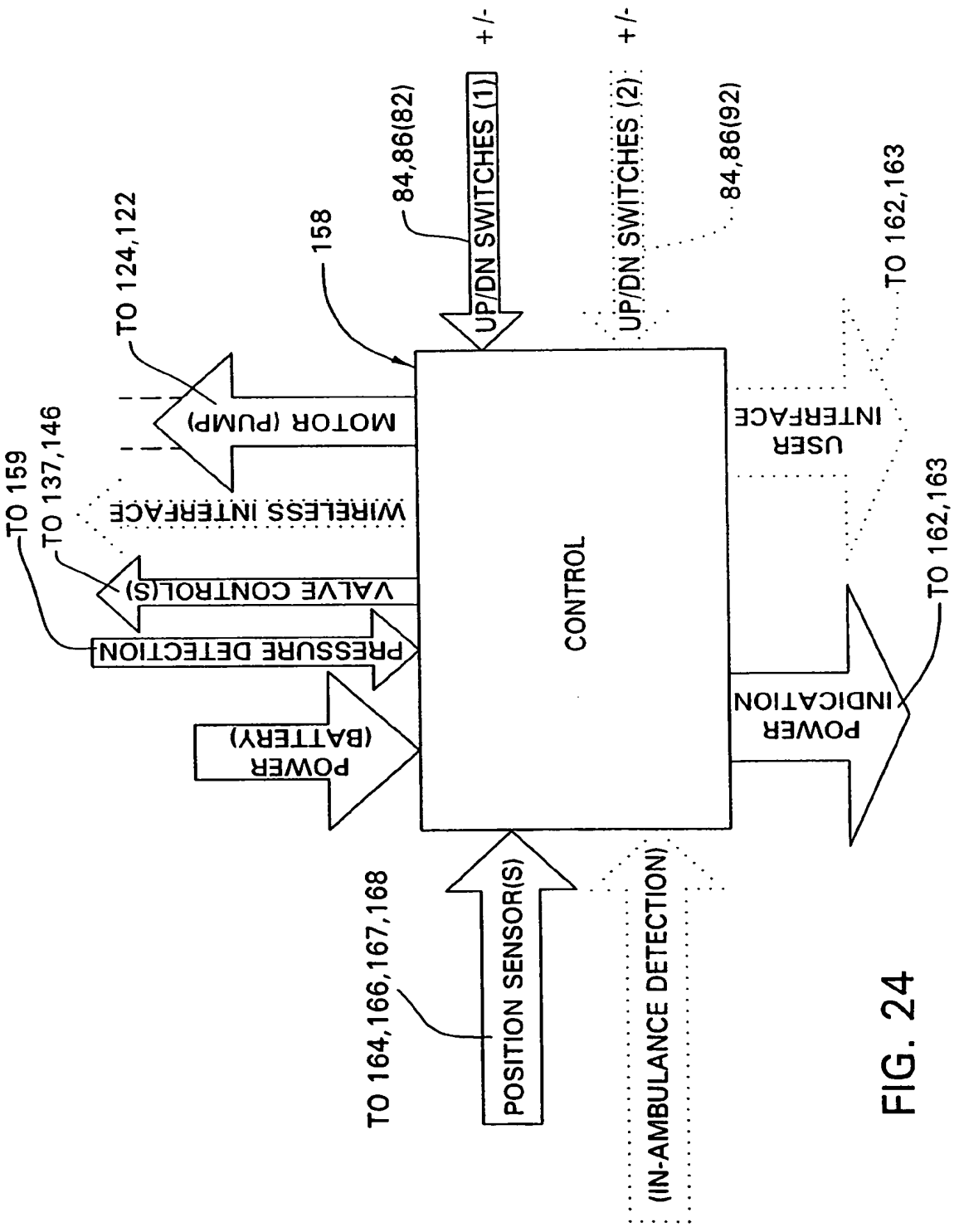

+/-
+/-
84,86(82)
84,86(92)
158
TO 124,122
TO 162,163
UP/DN SWITCHES (1)
UP/DN SWITCHES (2)
MOTOR (PUMP)
USER INTERFACE
TO 159
TO 137,146
WIRELESS INTERFACE
VALVE CONTROL(S)
CONTROL
TO 162,163
PRESSURE DETECTION
POWER INDICATION
POWER (BATTERY)
TO 164,166,167,168
POSITION SENSOR(S)
(IN-AMBULANCE DETECTION)

FIG. 24

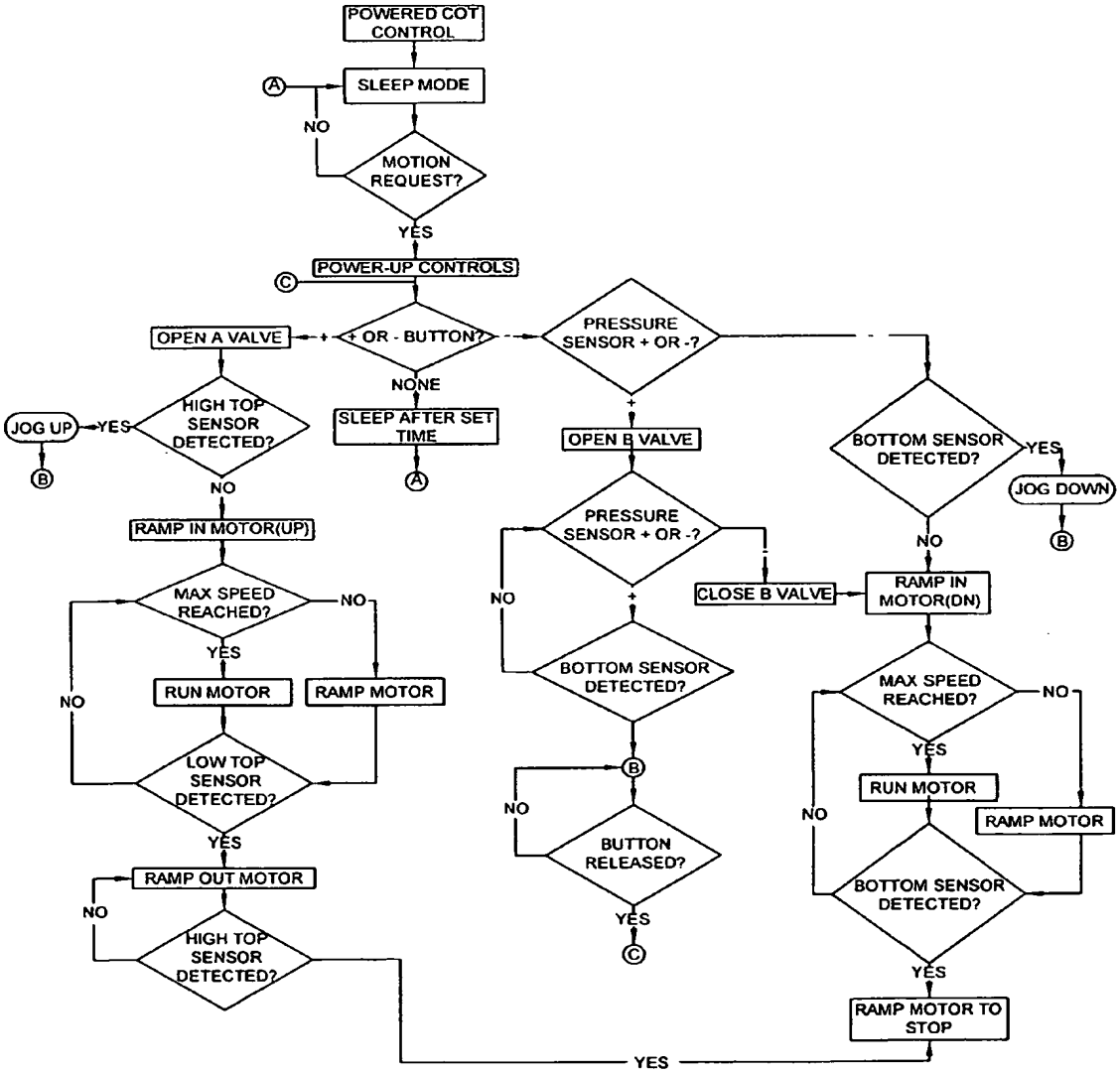

POWERED COT CONTROL
SLEEP MODE
NO
MOTION REQUEST?
YES
POWER-UP CONTROLS
+ OR - BUTTON?
NONE
SLEEP AFTER SET TIME
OPEN A VALVE
HIGH TOP SENSOR DETECTED?
JOG UP
YES
NO
RAMP IN MOTOR(UP)
MAX SPEED REACHED?
NO
YES
RUN MOTOR
RAMP MOTOR
LOW TOP SENSOR DETECTED?
NO
YES
RAMP OUT MOTOR
HIGH TOP SENSOR DETECTED?
NO
YES
PRESSURE SENSOR + OR -?
OPEN B VALVE
PRESSURE SENSOR + OR -?
NO
BOTTOM SENSOR DETECTED?
NO
BUTTON RELEASED?
YES
BOTTOM SENSOR DETECTED?
YES
JOG DOWN
NO
CLOSE B VALVE
RAMP IN MOTOR(DN)
MAX SPEED REACHED?
NO
YES
RUN MOTOR
RAMP MOTOR
NO
BOTTOM SENSOR DETECTED?
YES
RAMP MOTOR TO STOP
YES

FIG. 25

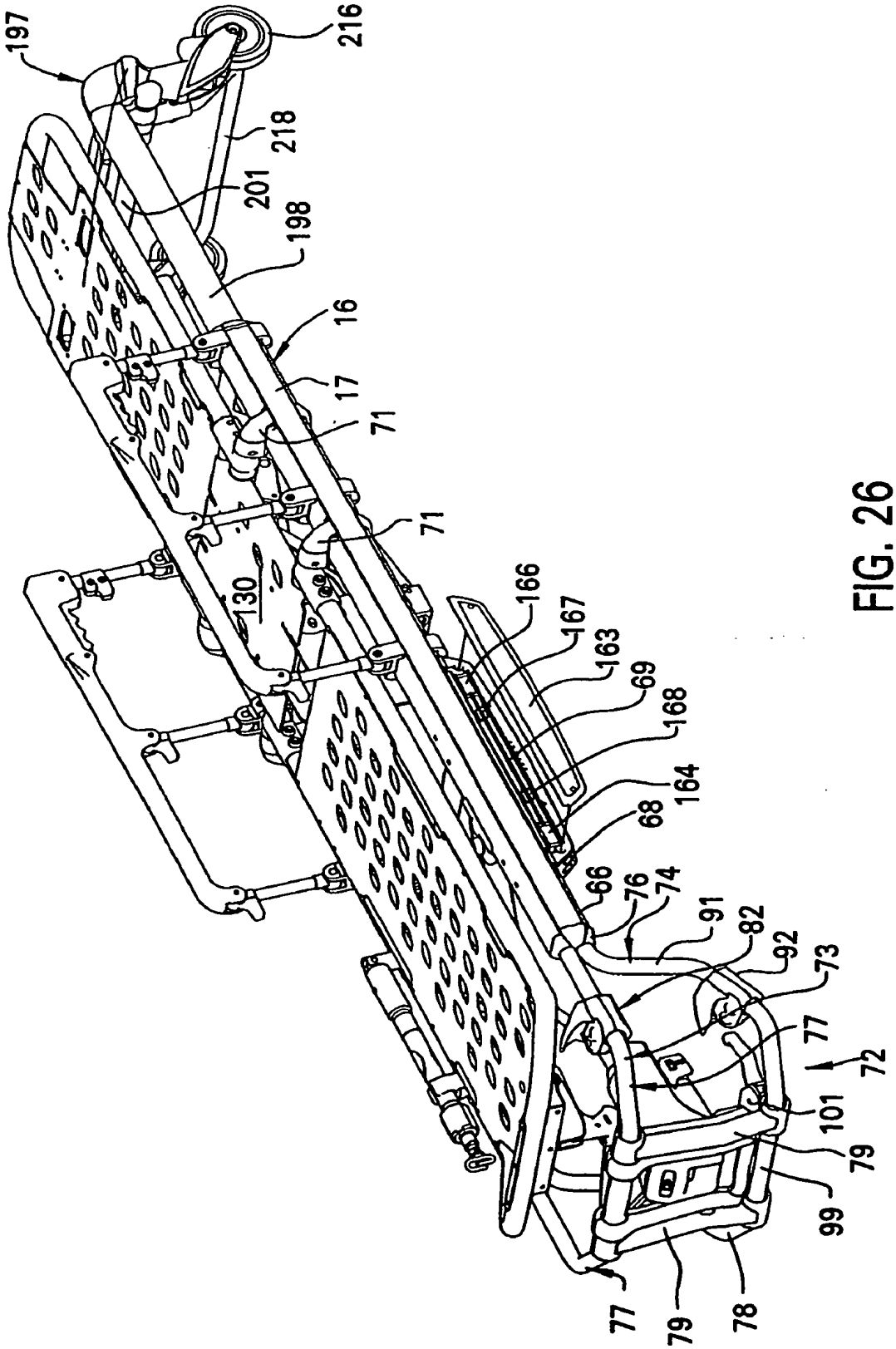

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FIG. 26

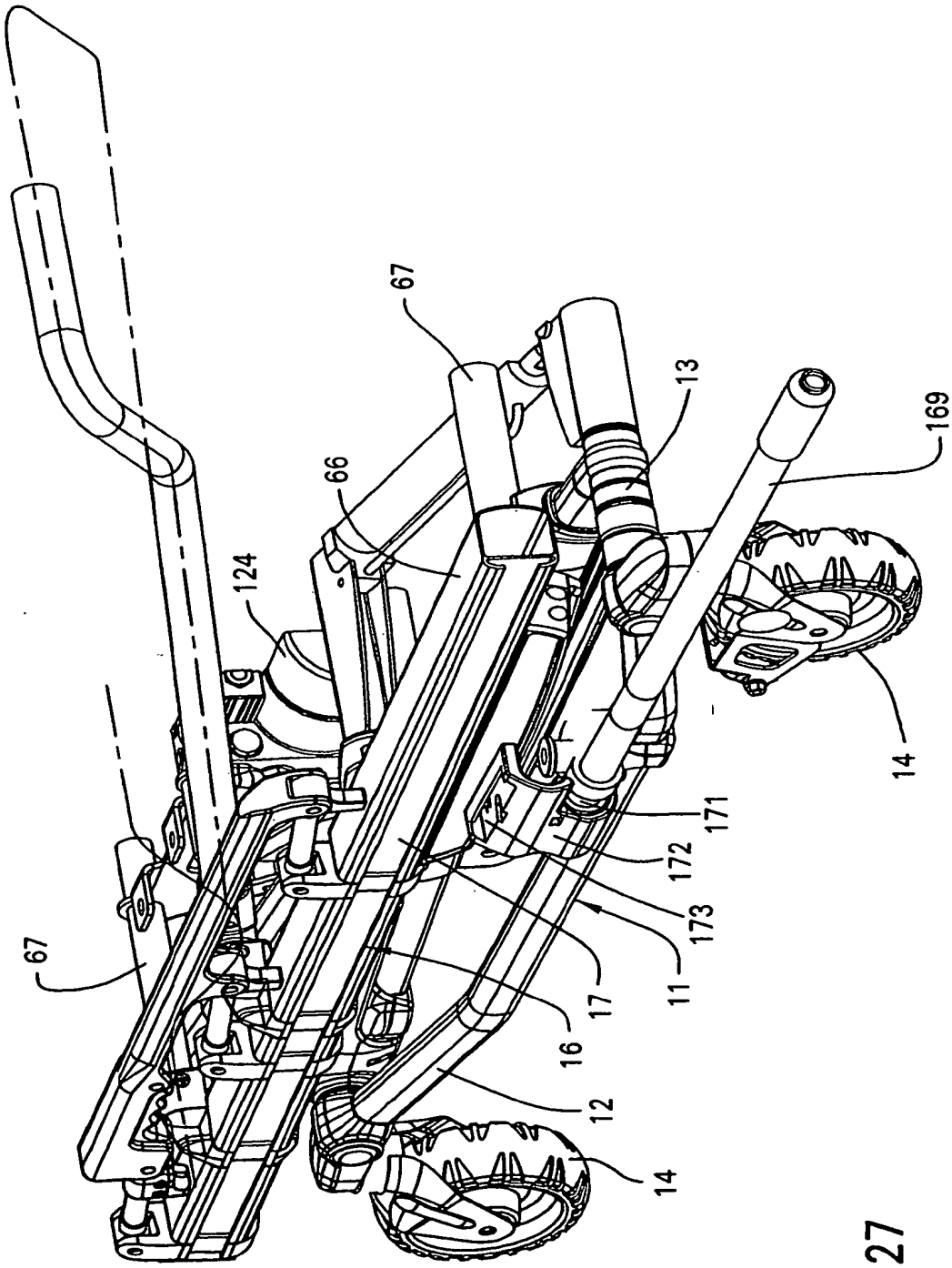



FIG. 27

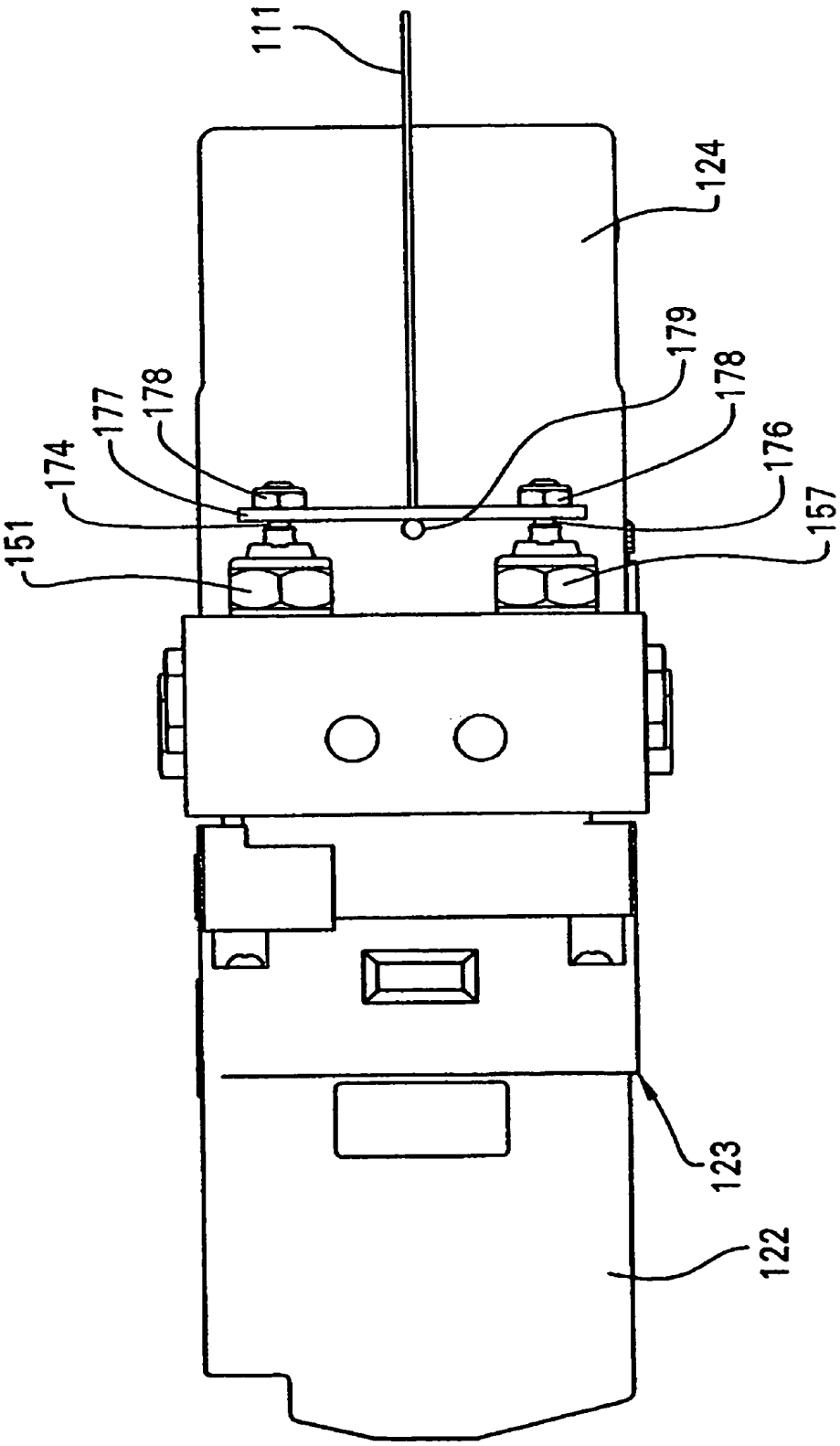



FIG. 28

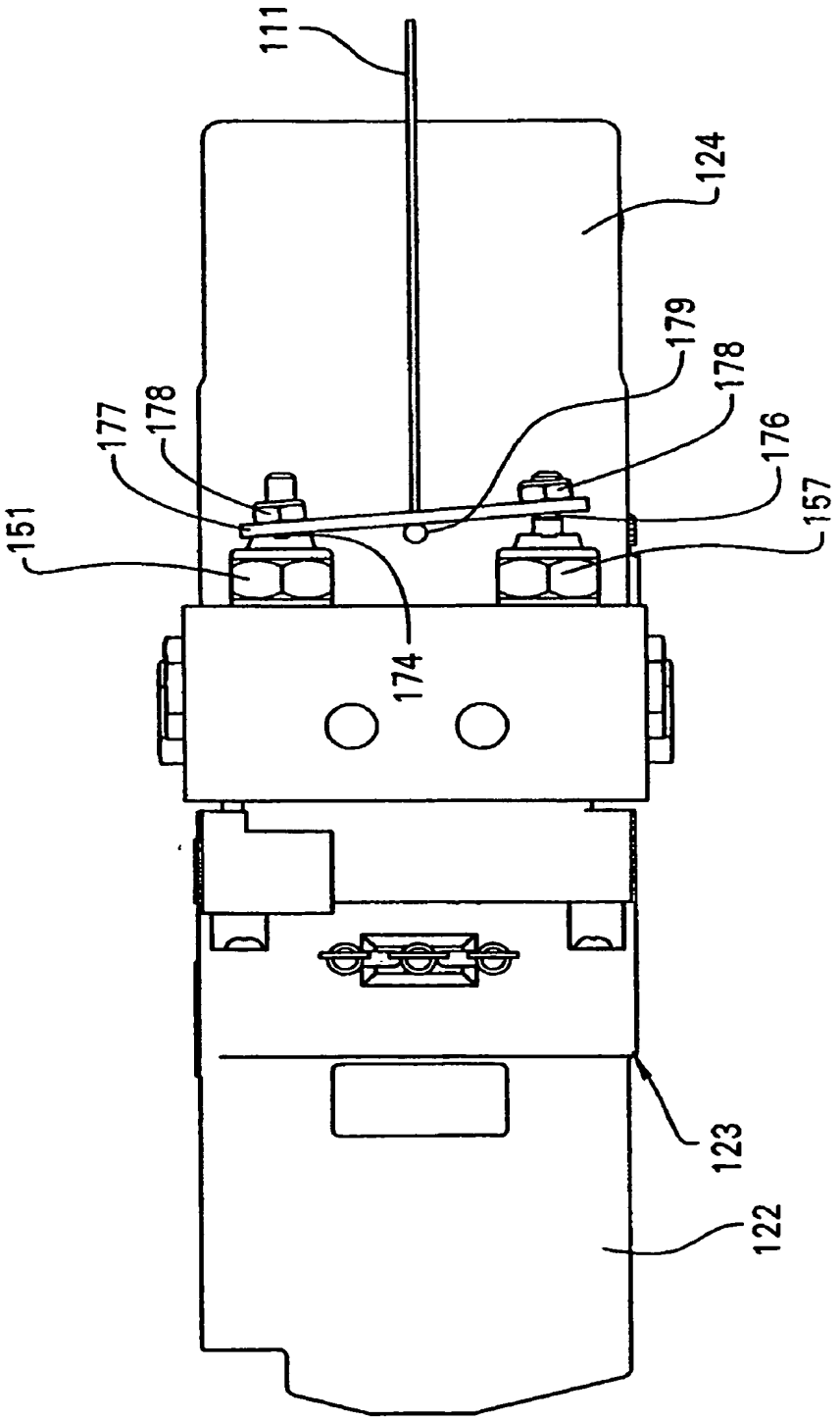



FIG. 29

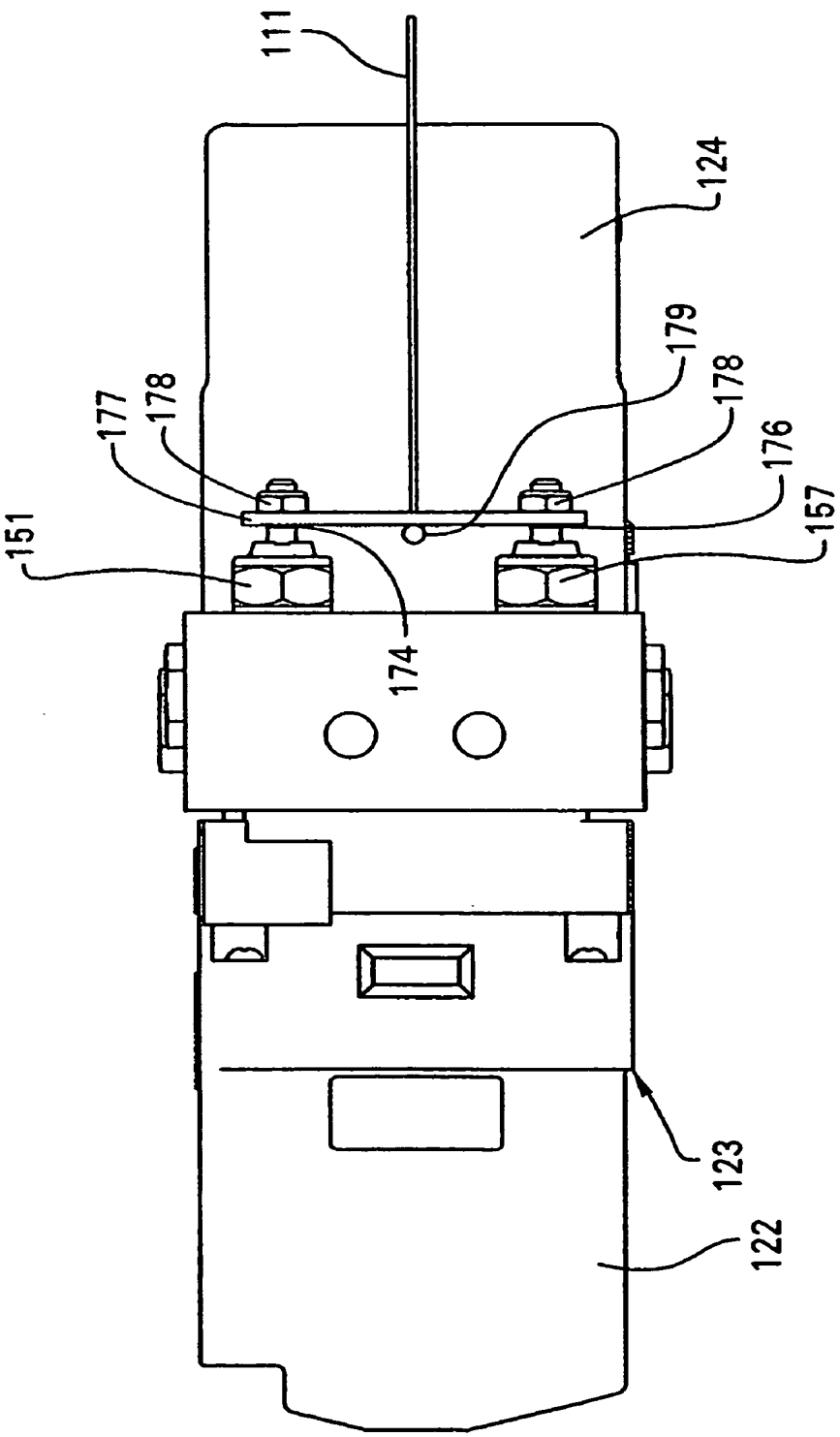



FIG. 30

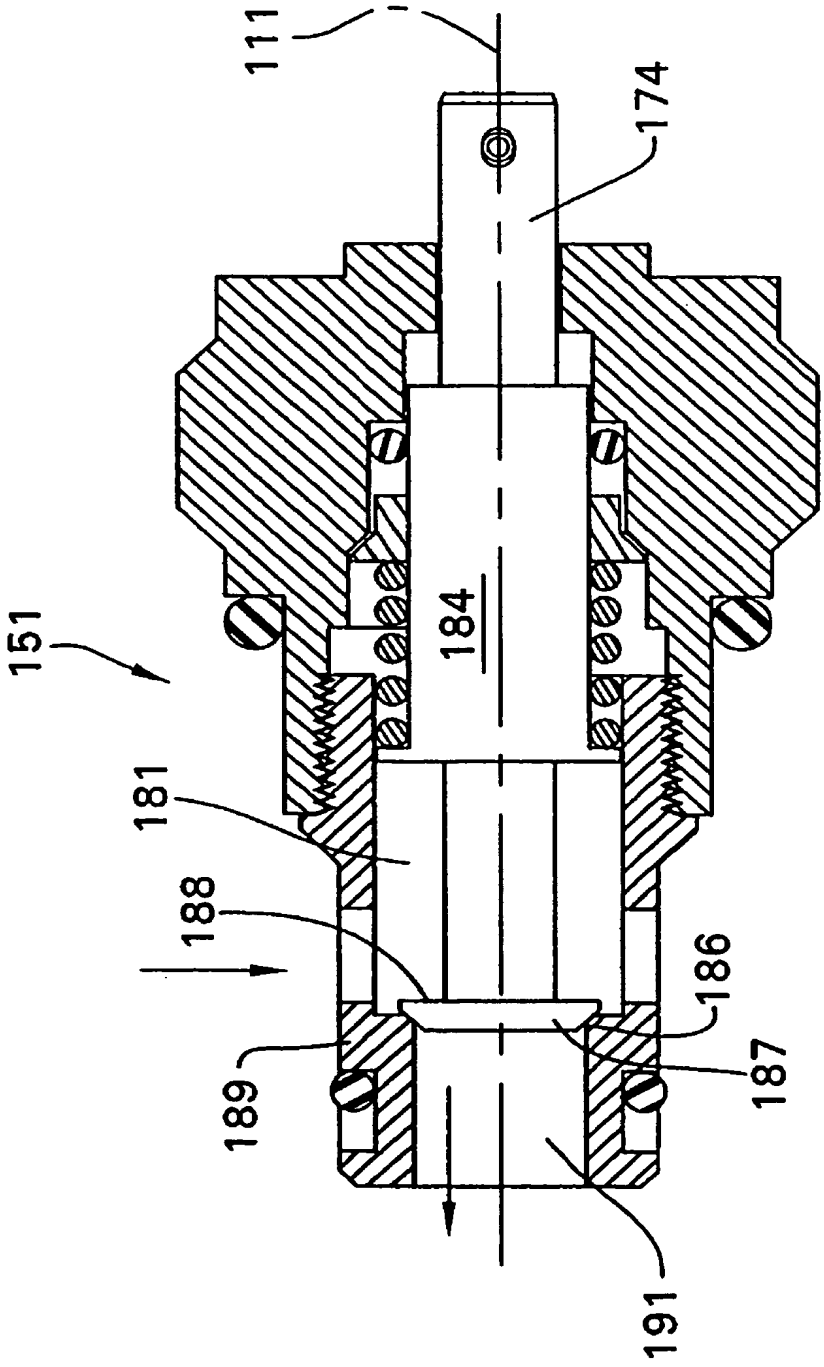



FIG. 31

FIG. 32

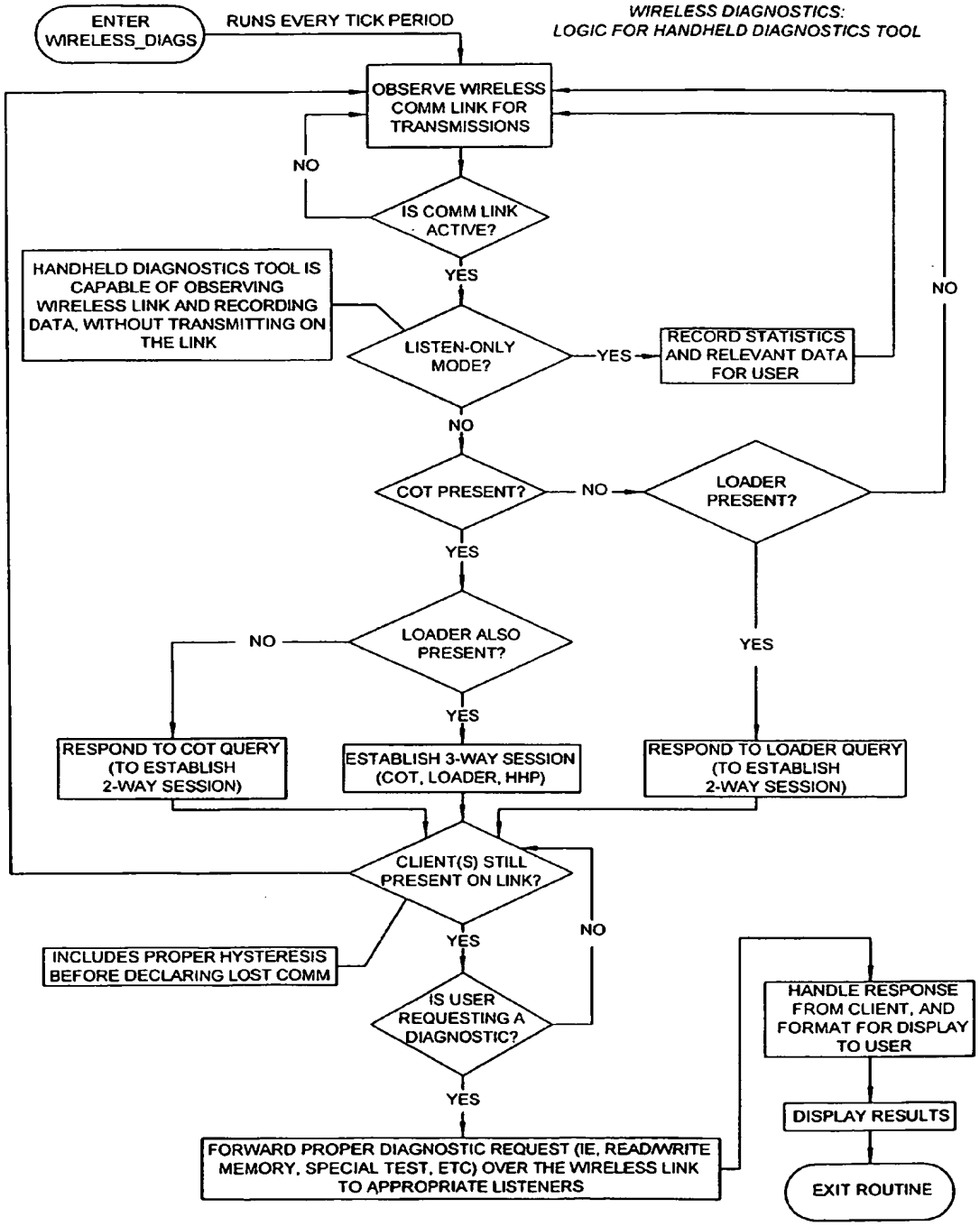

ENTER WIRELESS_DIAGS
RUNS EVERY TICK PERIOD
WIRELESS DIAGNOSTICS: LOGIC FOR HANDHELD DIAGNOSTICS TOOL
OBSERVE WIRELESS COMM LINK FOR TRANSMISSIONS
NO
IS COMM LINK ACTIVE?
YES
HANDHELD DIAGNOSTICS TOOL IS CAPABLE OF OBSERVING WIRELESS LINK AND RECORDING DATA, WITHOUT TRANSMITTING ON THE LINK
LISTEN-ONLY MODE?
YES
RECORD STATISTICS AND RELEVANT DATA FOR USER
NO
NO
COT PRESENT?
NO
LOADER PRESENT?
YES
LOADER ALSO PRESENT?
NO
YES
YES
RESPOND TO COT QUERY (TO ESTABLISH 2-WAY SESSION)
ESTABLISH 3-WAY SESSION (COT, LOADER, HHP)
RESPOND TO LOADER QUERY (TO ESTABLISH 2-WAY SESSION)
CLIENT(S) STILL PRESENT ON LINK?
NO
YES
INCLUDES PROPER HYSTERESIS BEFORE DECLARING LOST COMM
IS USER REQUESTING A DIAGNOSTIC?
YES
FORWARD PROPER DIAGNOSTIC REQUEST (IE, READ/WRITE MEMORY, SPECIAL TEST, ETC) OVER THE WIRELESS LINK TO APPROPRIATE LISTENERS
HANDLE RESPONSE FROM CLIENT, AND FORMAT FOR DISPLAY TO USER
DISPLAY RESULTS
EXIT ROUTINE

FIG. 33

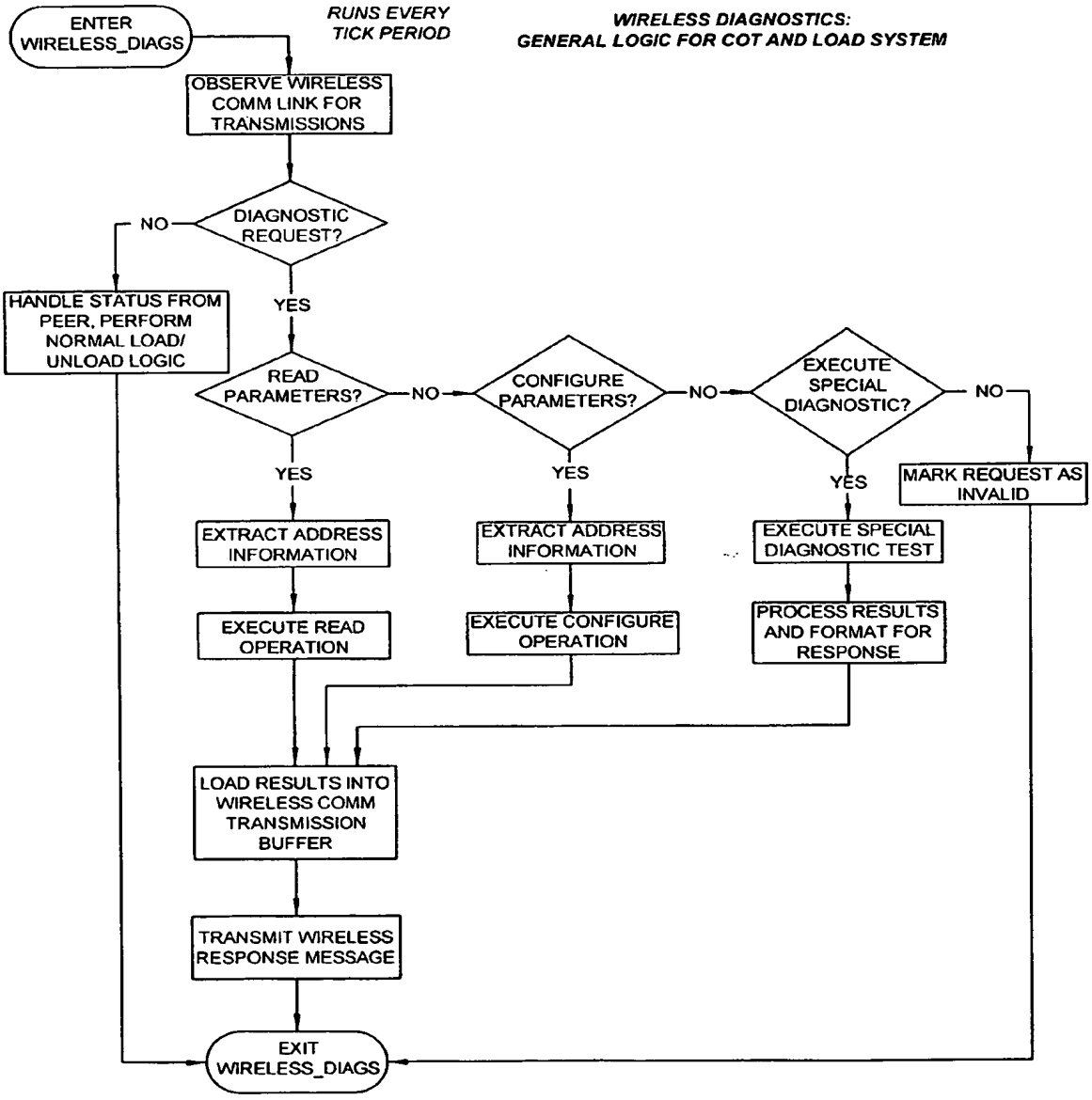
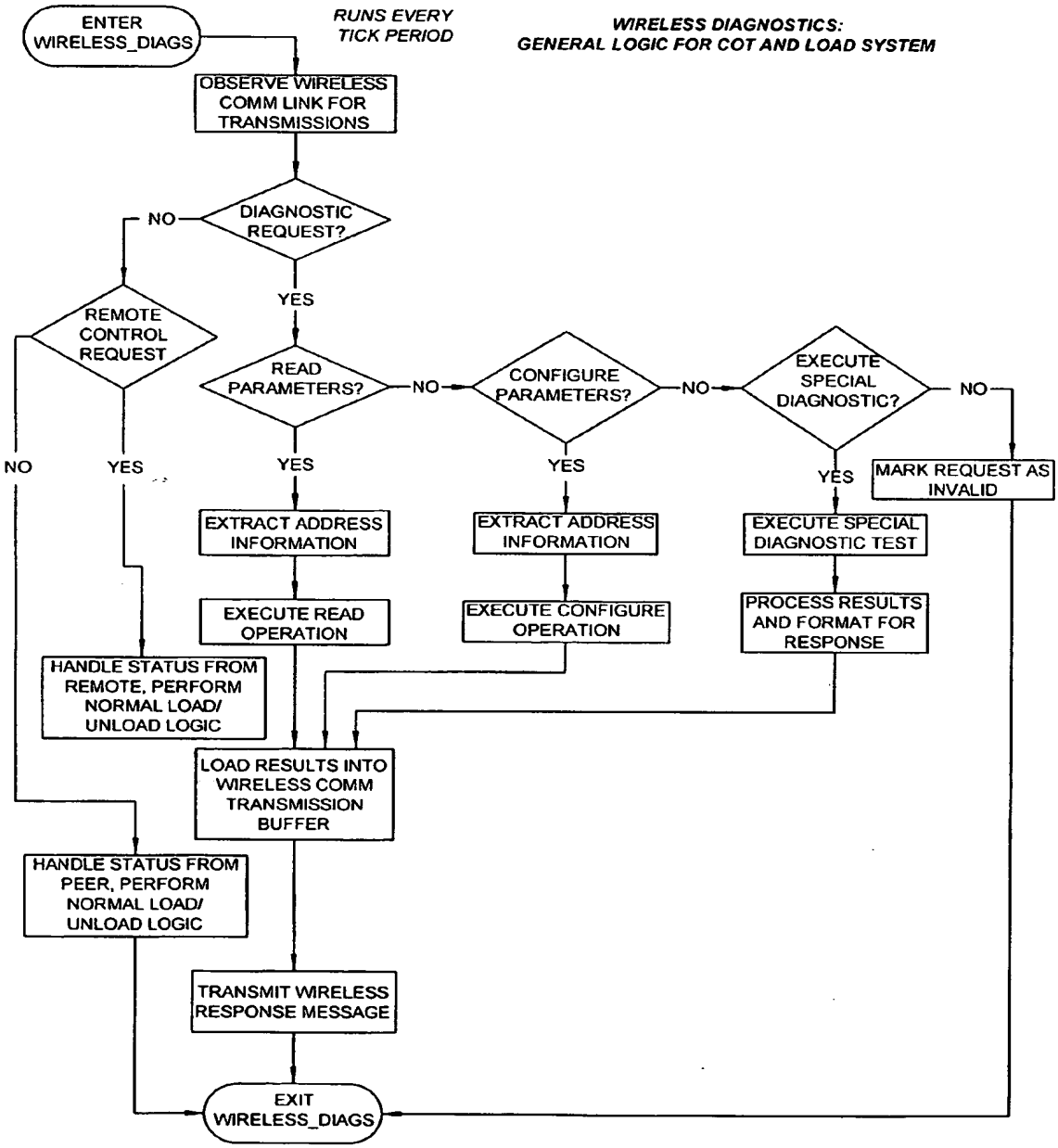

ENTER WIRELESS_DIAGS
RUNS EVERY TICK PERIOD
WIRELESS DIAGNOSTICS: GENERAL LOGIC FOR COT AND LOAD SYSTEM
OBSERVE WIRELESS COMM LINK FOR TRANSMISSIONS
DIAGNOSTIC REQUEST?
NO
YES
HANDLE STATUS FROM PEER, PERFORM NORMAL LOAD/ UNLOAD LOGIC
READ PARAMETERS?
NO
CONFIGURE PARAMETERS?
NO
EXECUTE SPECIAL DIAGNOSTIC?
NO
MARK REQUEST AS INVALID
YES
YES
YES
EXTRACT ADDRESS INFORMATION
EXTRACT ADDRESS INFORMATION
EXECUTE SPECIAL DIAGNOSTIC TEST
EXECUTE READ OPERATION
EXECUTE CONFIGURE OPERATION
PROCESS RESULTS AND FORMAT FOR RESPONSE
LOAD RESULTS INTO WIRELESS COMM TRANSMISSION BUFFER
TRANSMIT WIRELESS RESPONSE MESSAGE
EXIT WIRELESS_DIAGS

FIG. 33A


ENTER WIRELESS_DIAGS
RUNS EVERY TICK PERIOD
WIRELESS DIAGNOSTICS: GENERAL LOGIC FOR COT AND LOAD SYSTEM
OBSERVE WIRELESS COMM LINK FOR TRANSMISSIONS
DIAGNOSTIC REQUEST?
NO
YES
REMOTE CONTROL REQUEST
READ PARAMETERS?
NO
CONFIGURE PARAMETERS?
NO
EXECUTE SPECIAL DIAGNOSTIC?
NO
NO
YES
YES
YES
YES
MARK REQUEST AS INVALID
EXTRACT ADDRESS INFORMATION
EXTRACT ADDRESS INFORMATION
EXECUTE SPECIAL DIAGNOSTIC TEST
EXECUTE READ OPERATION
EXECUTE CONFIGURE OPERATION
PROCESS RESULTS AND FORMAT FOR RESPONSE
HANDLE STATUS FROM REMOTE, PERFORM NORMAL LOAD/ UNLOAD LOGIC
LOAD RESULTS INTO WIRELESS COMM TRANSMISSION BUFFER
HANDLE STATUS FROM PEER, PERFORM NORMAL LOAD/ UNLOAD LOGIC
TRANSMIT WIRELESS RESPONSE MESSAGE
EXIT WIRELESS_DIAGS

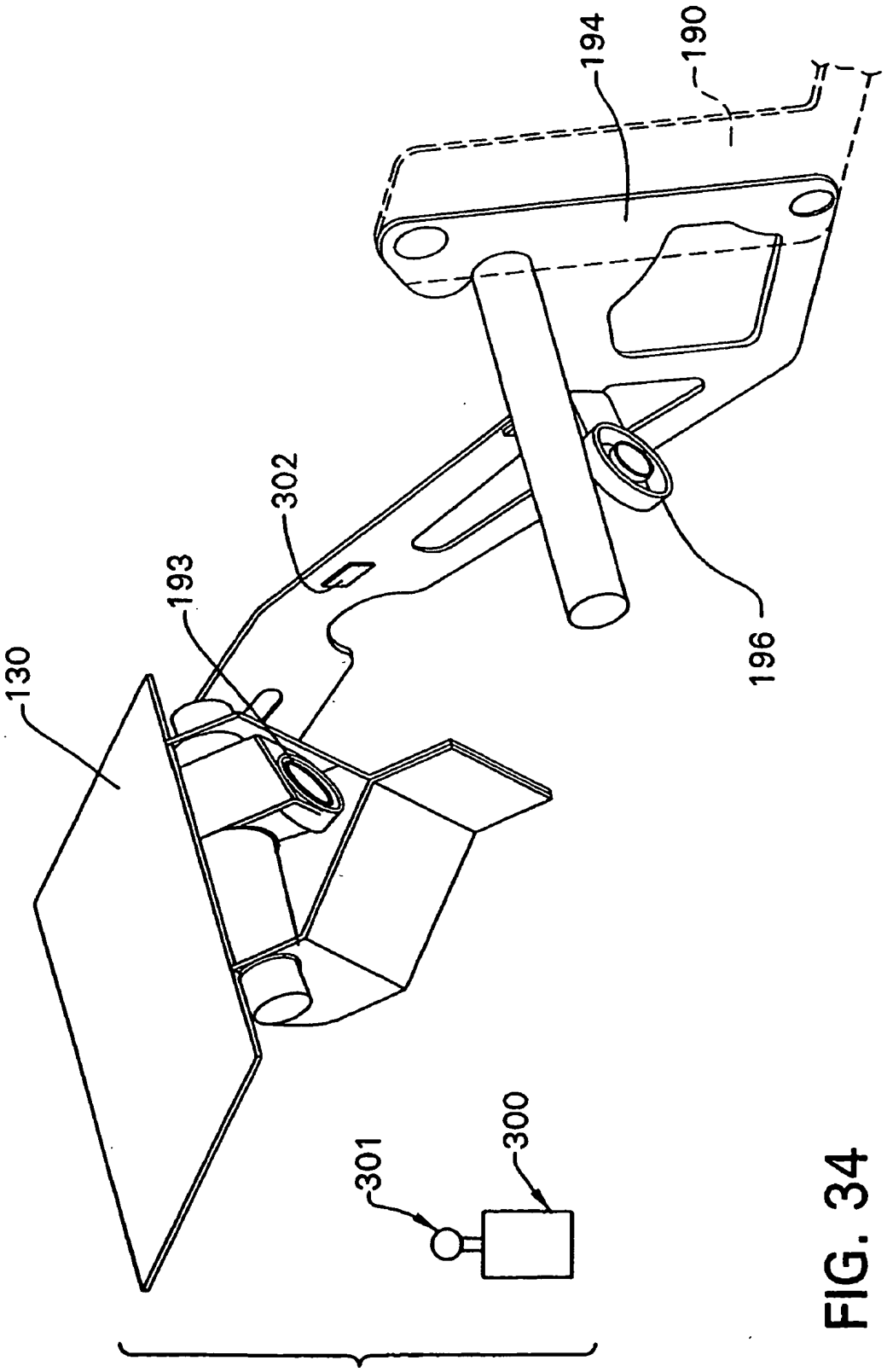



FIG. 34

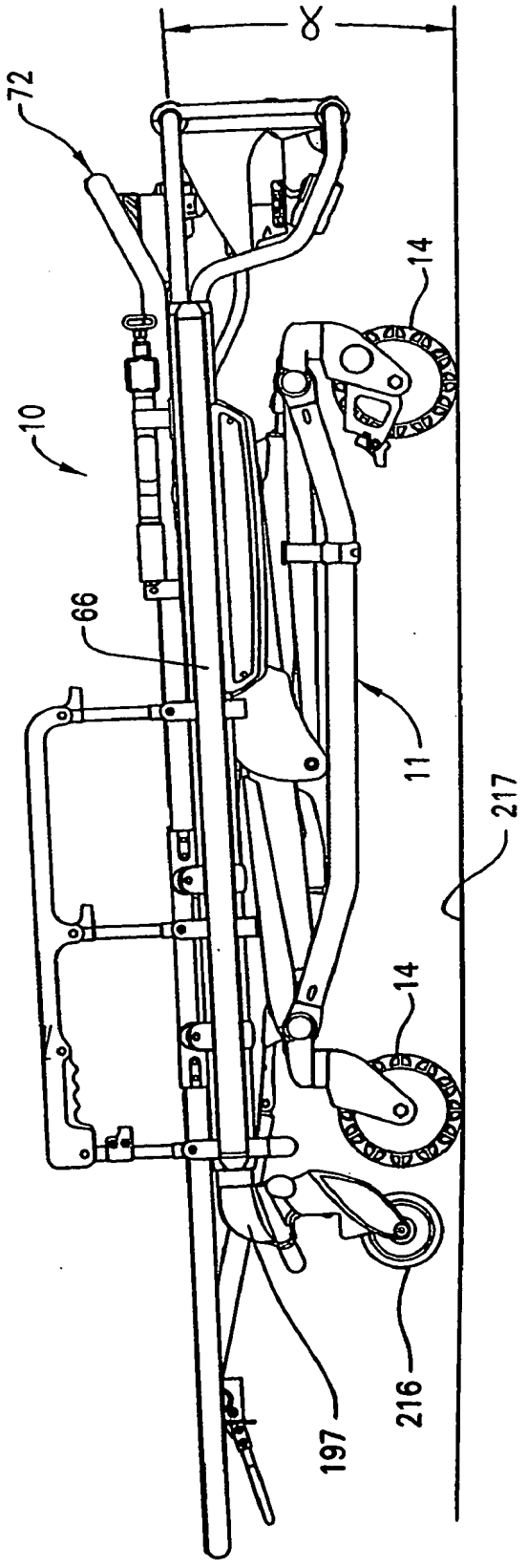



FIG. 35

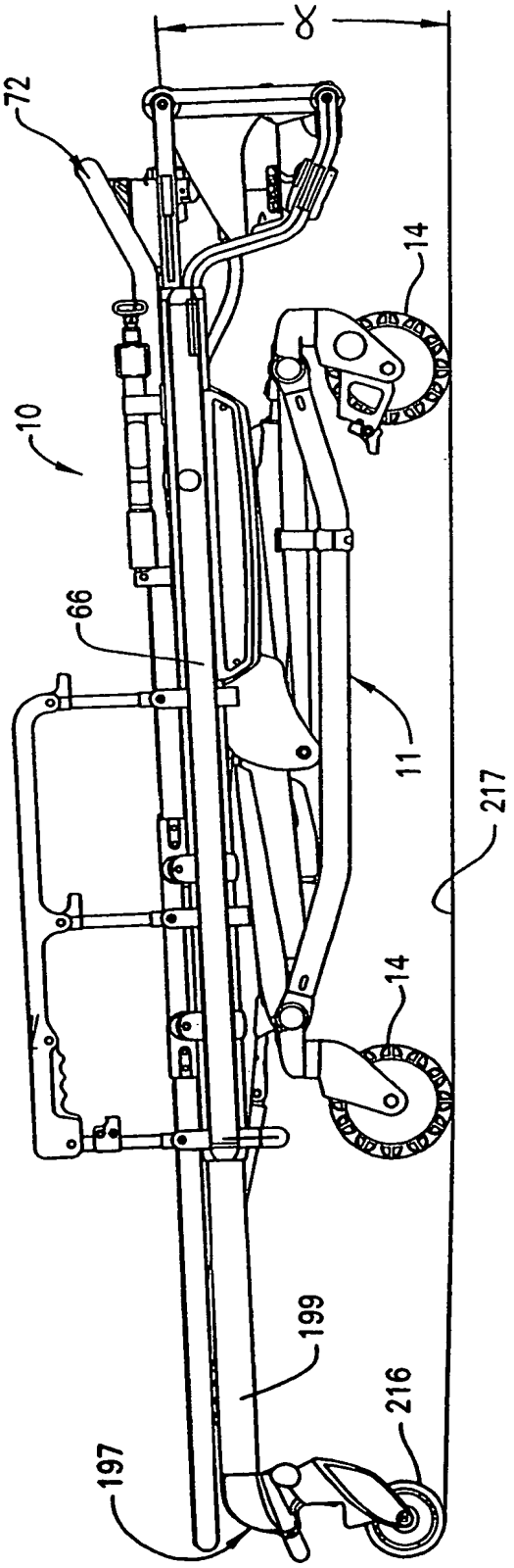



FIG. 36

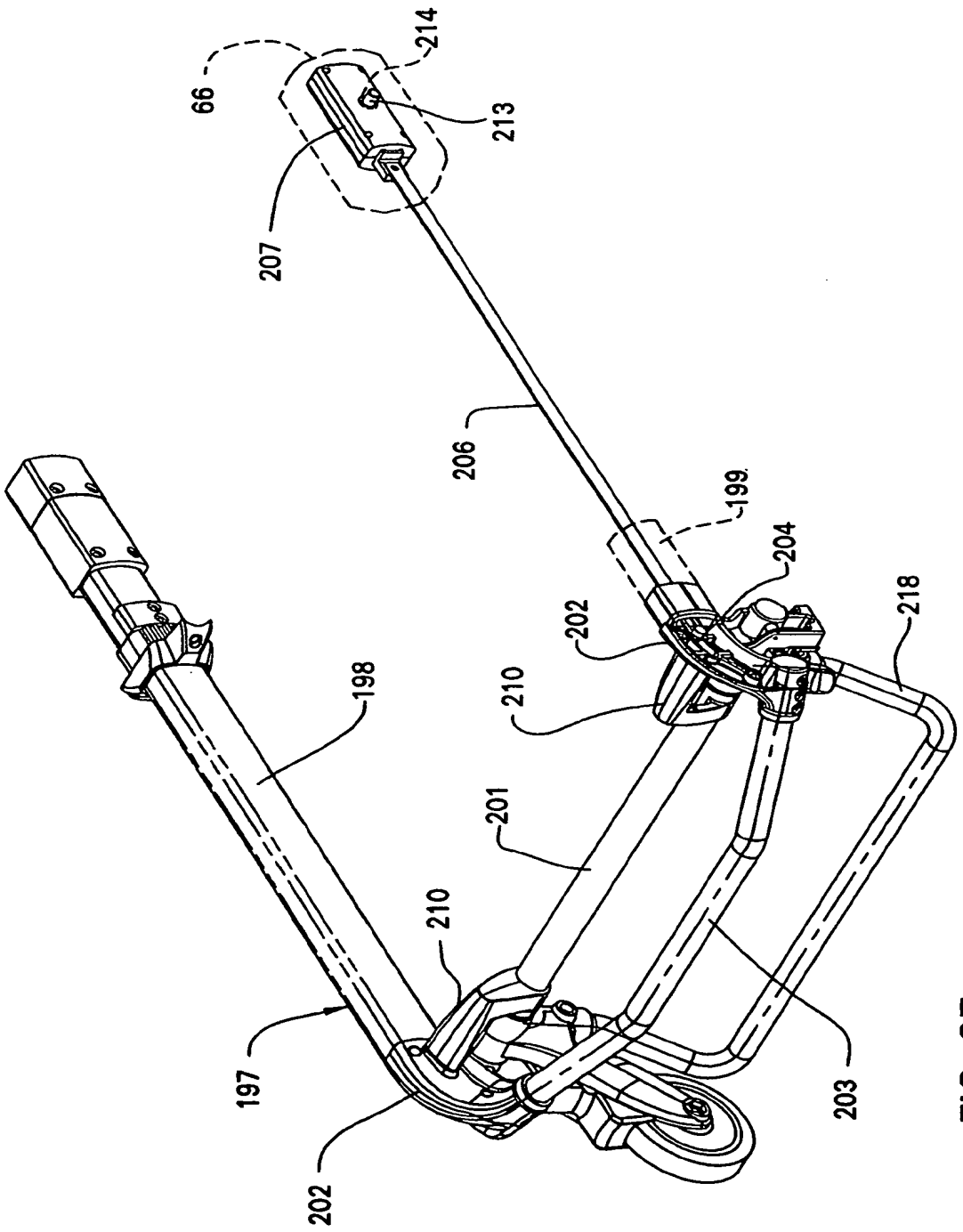



FIG. 37

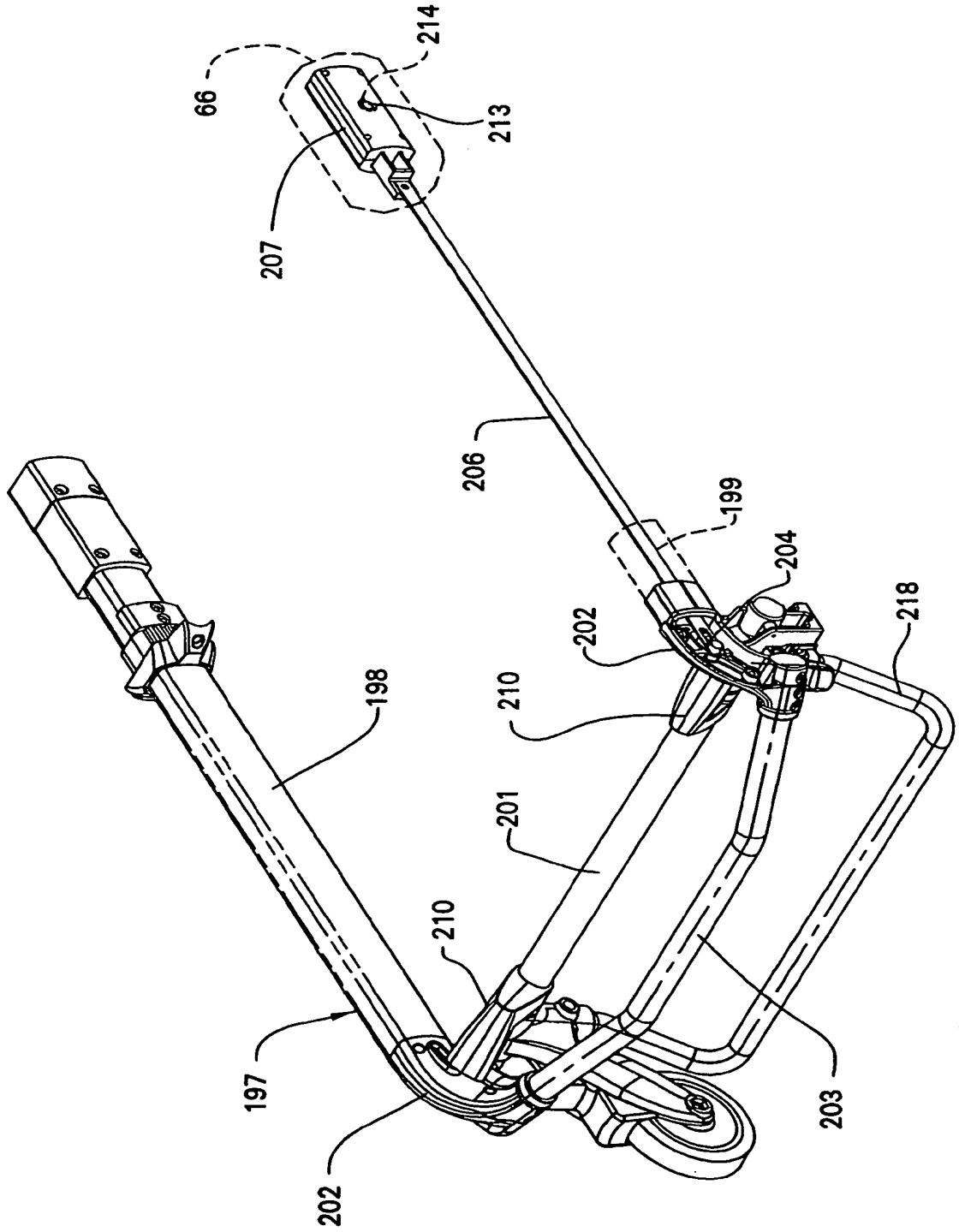



FIG. 38

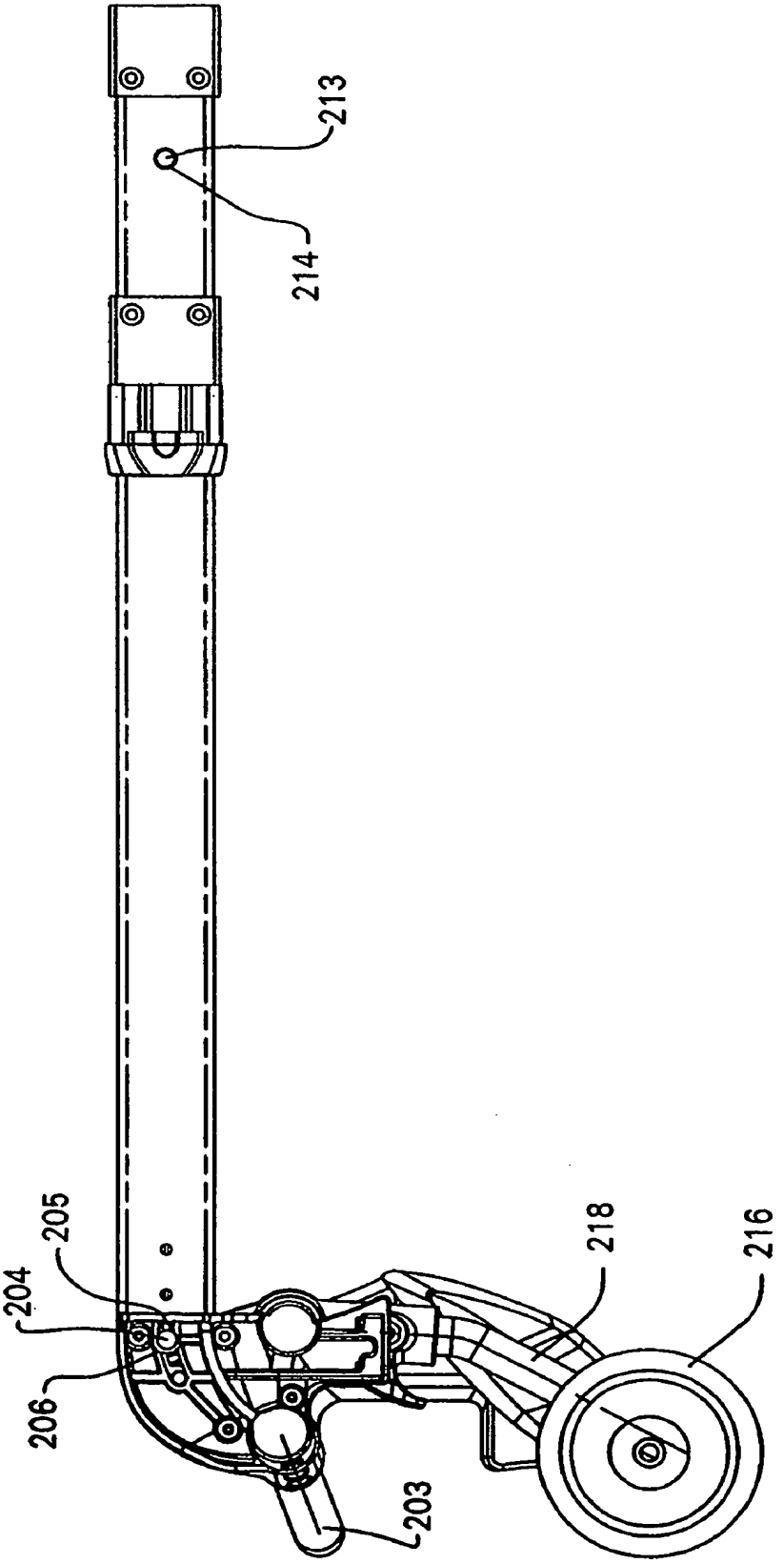



FIG. 39

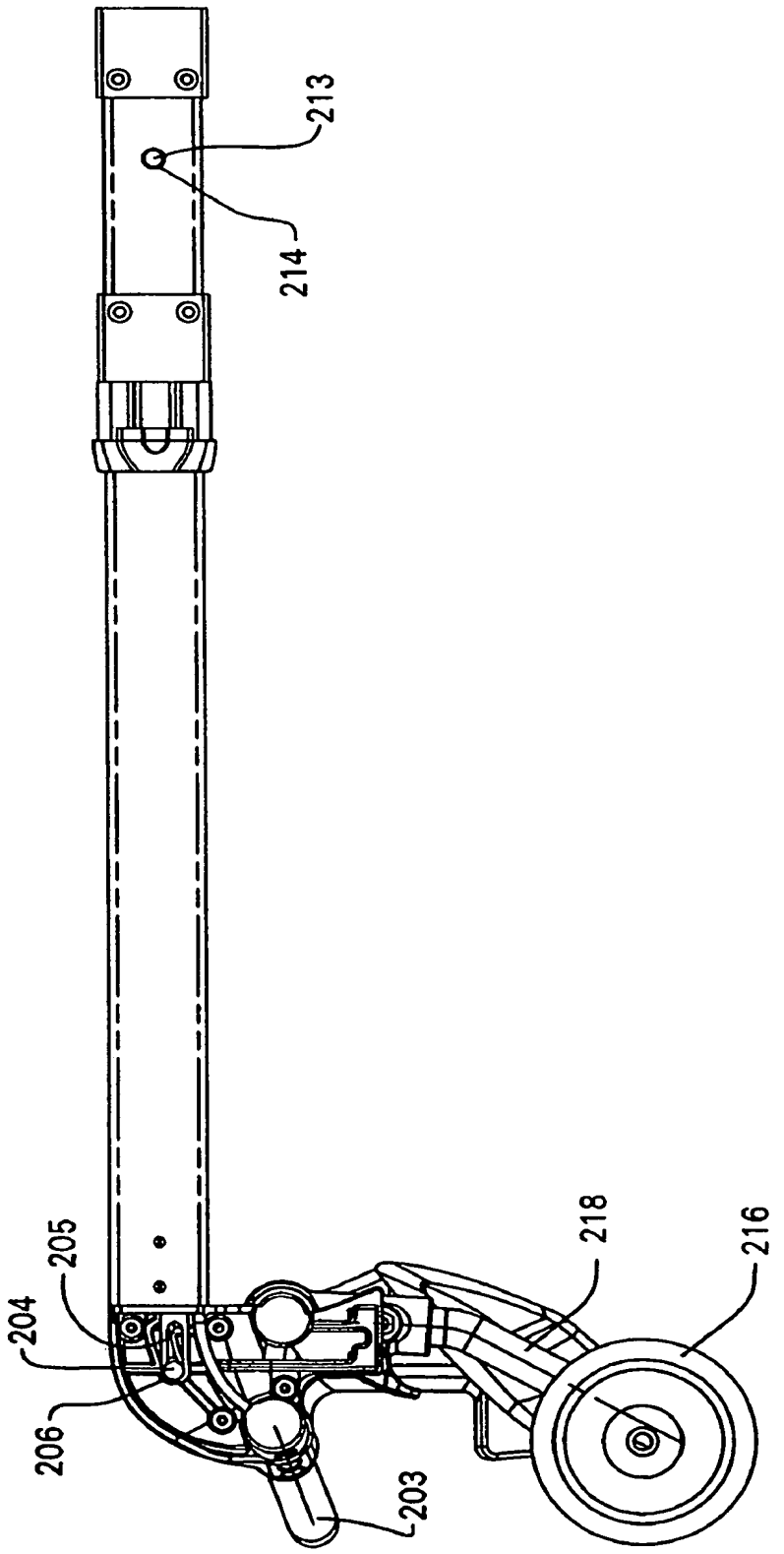



FIG. 40

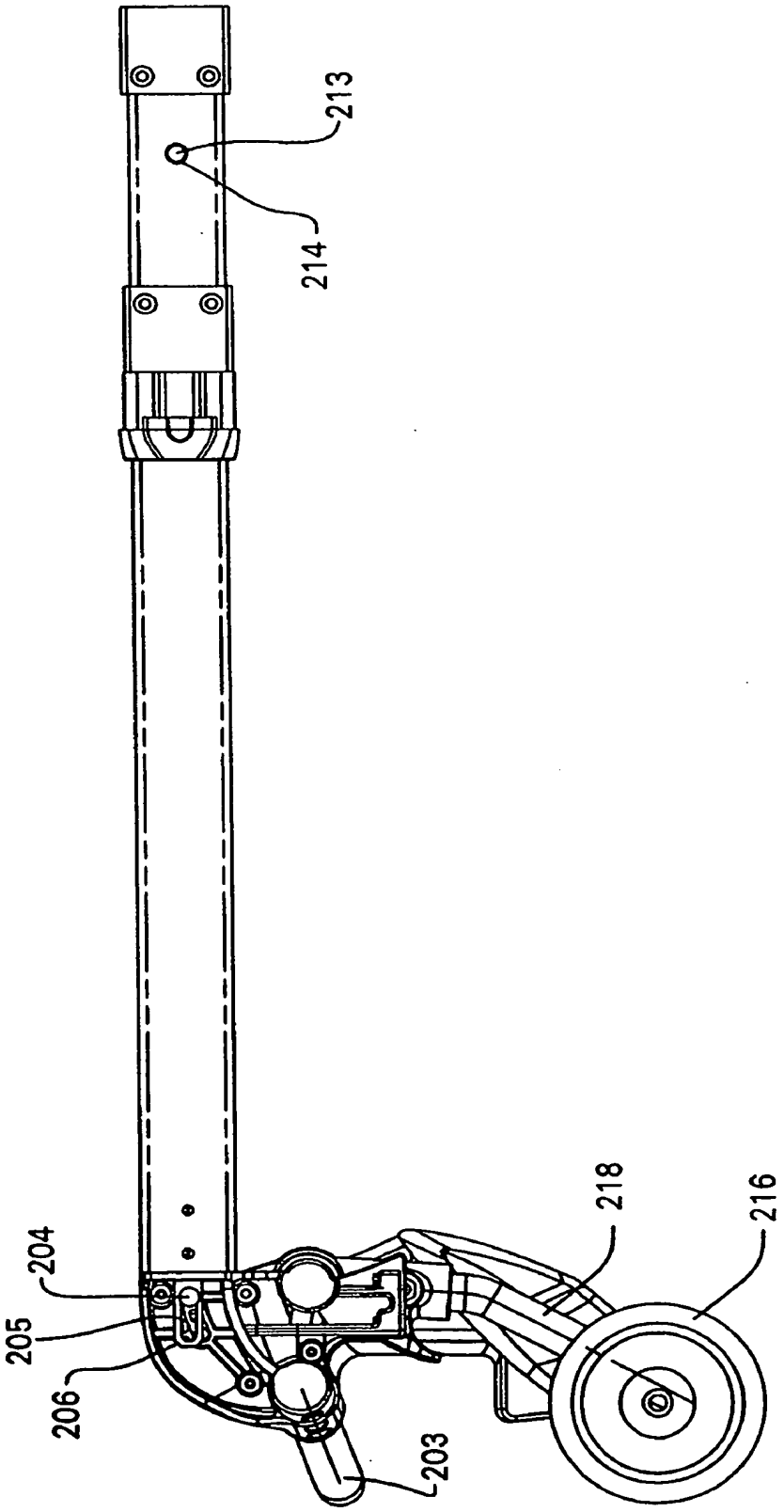



FIG. 41

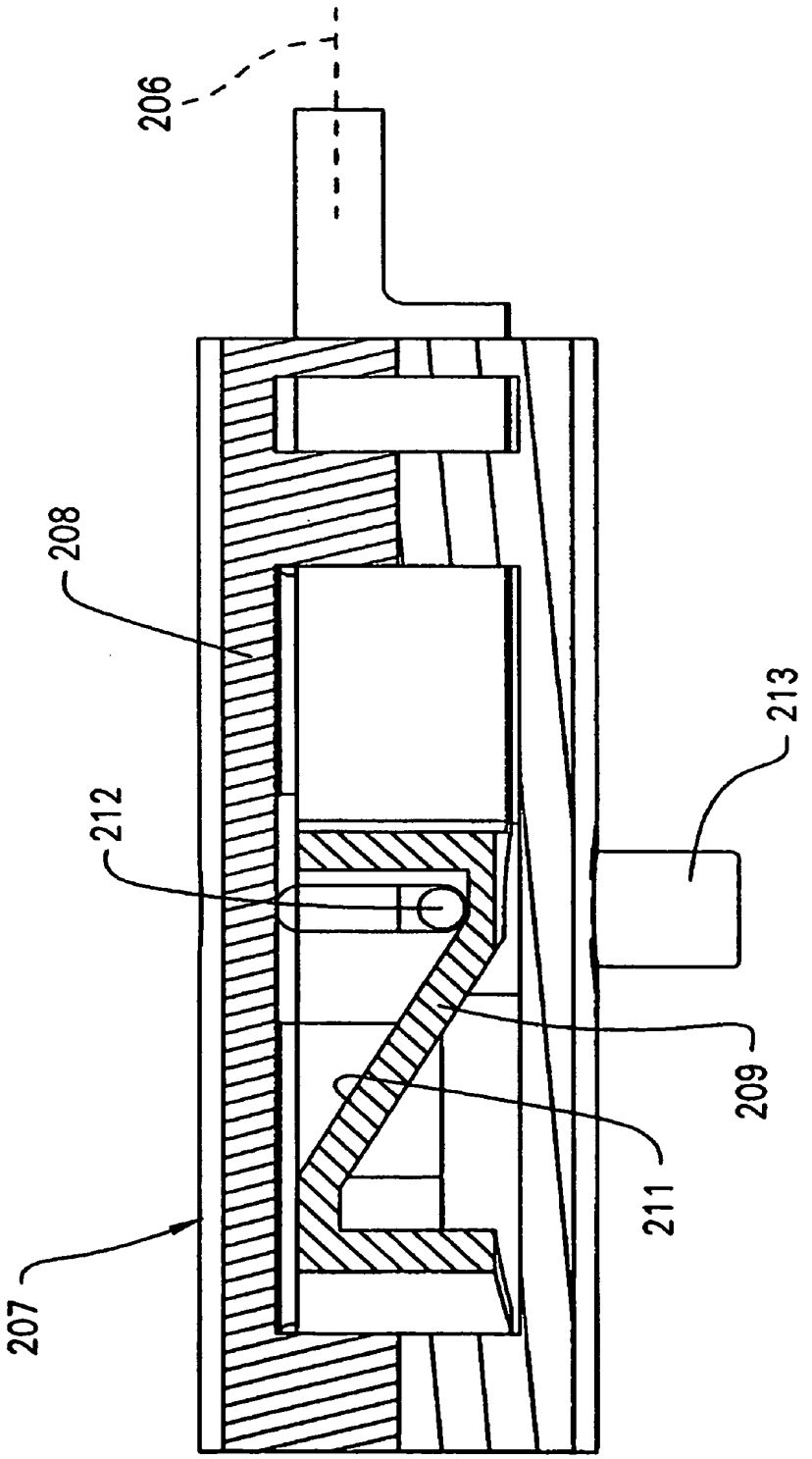



FIG. 42

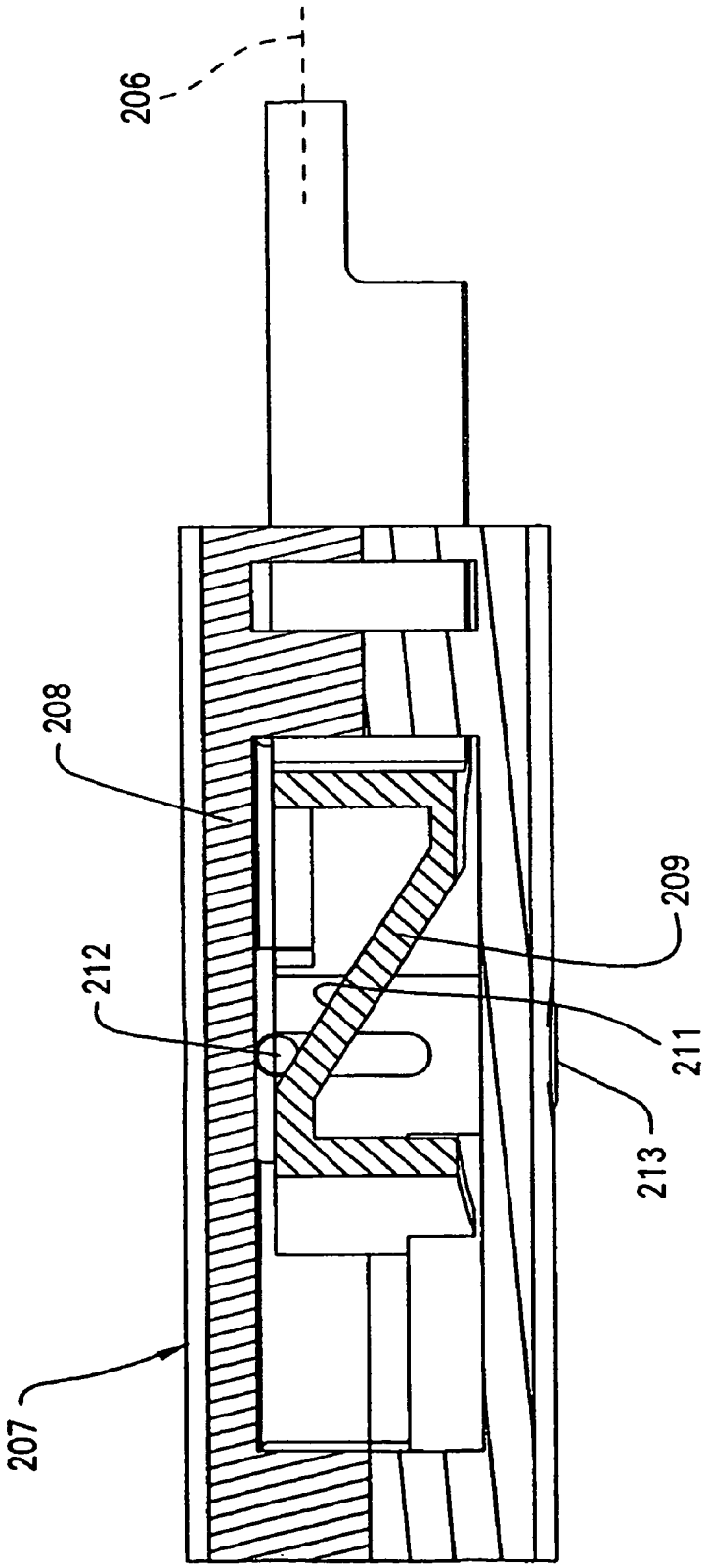



FIG. 43

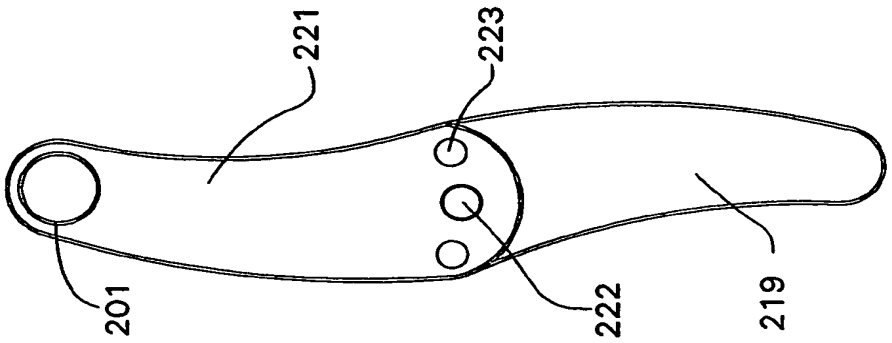



FIG. 46

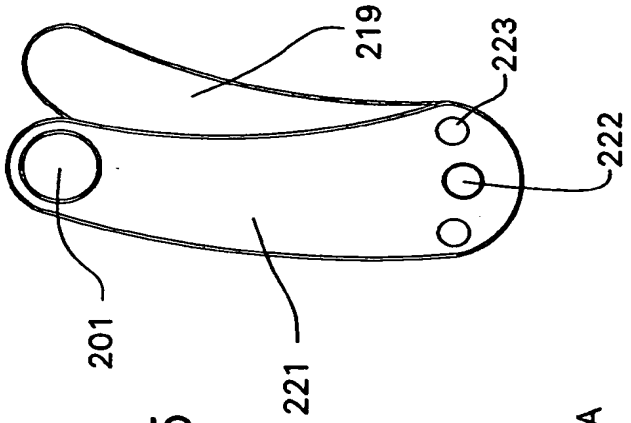



FIG. 45

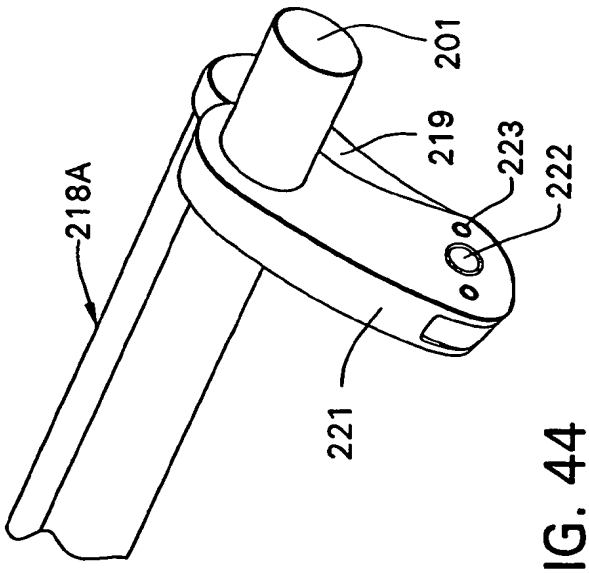



FIG. 44

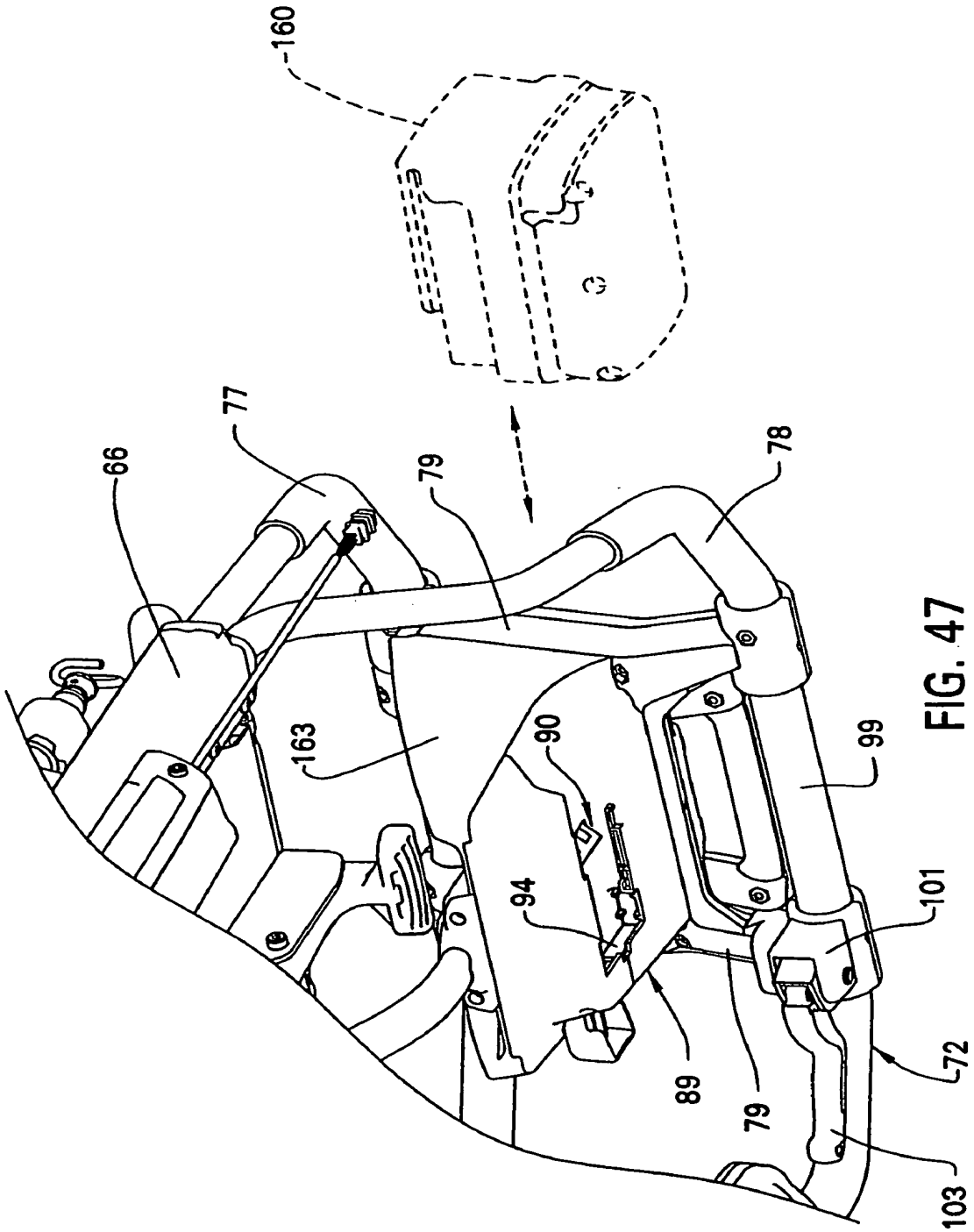



FIG. 47

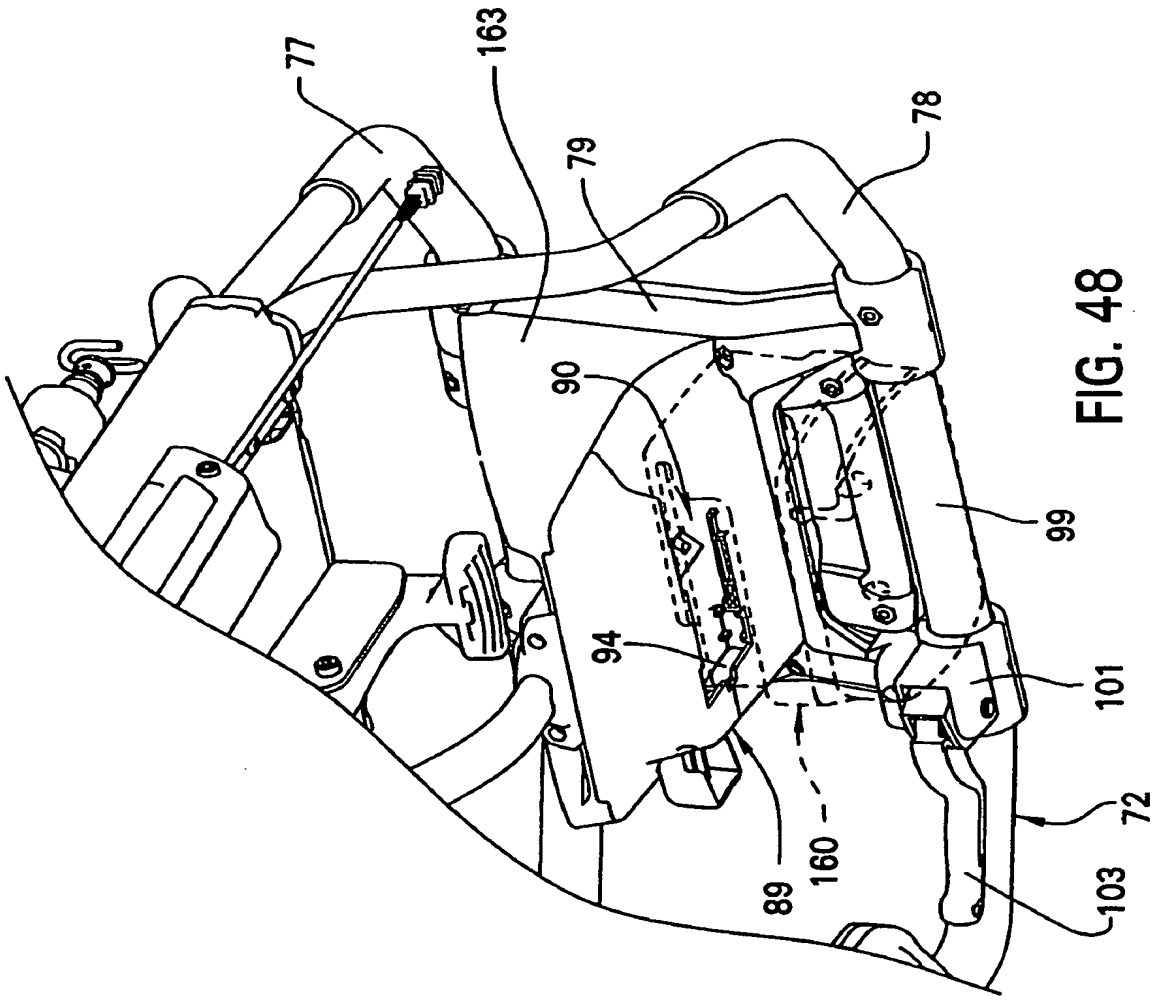



FIG. 48

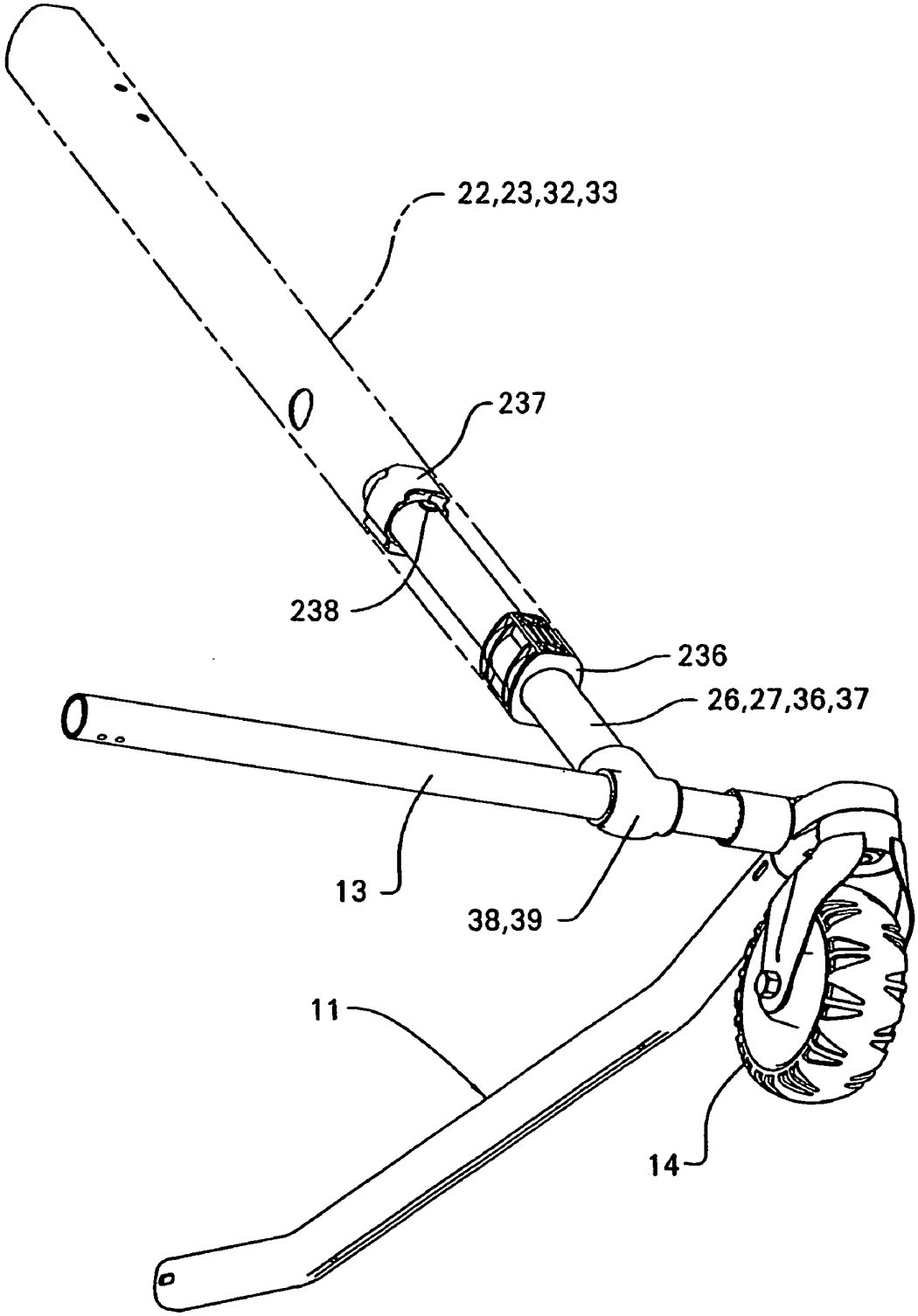



FIG. 49

FIG. 50

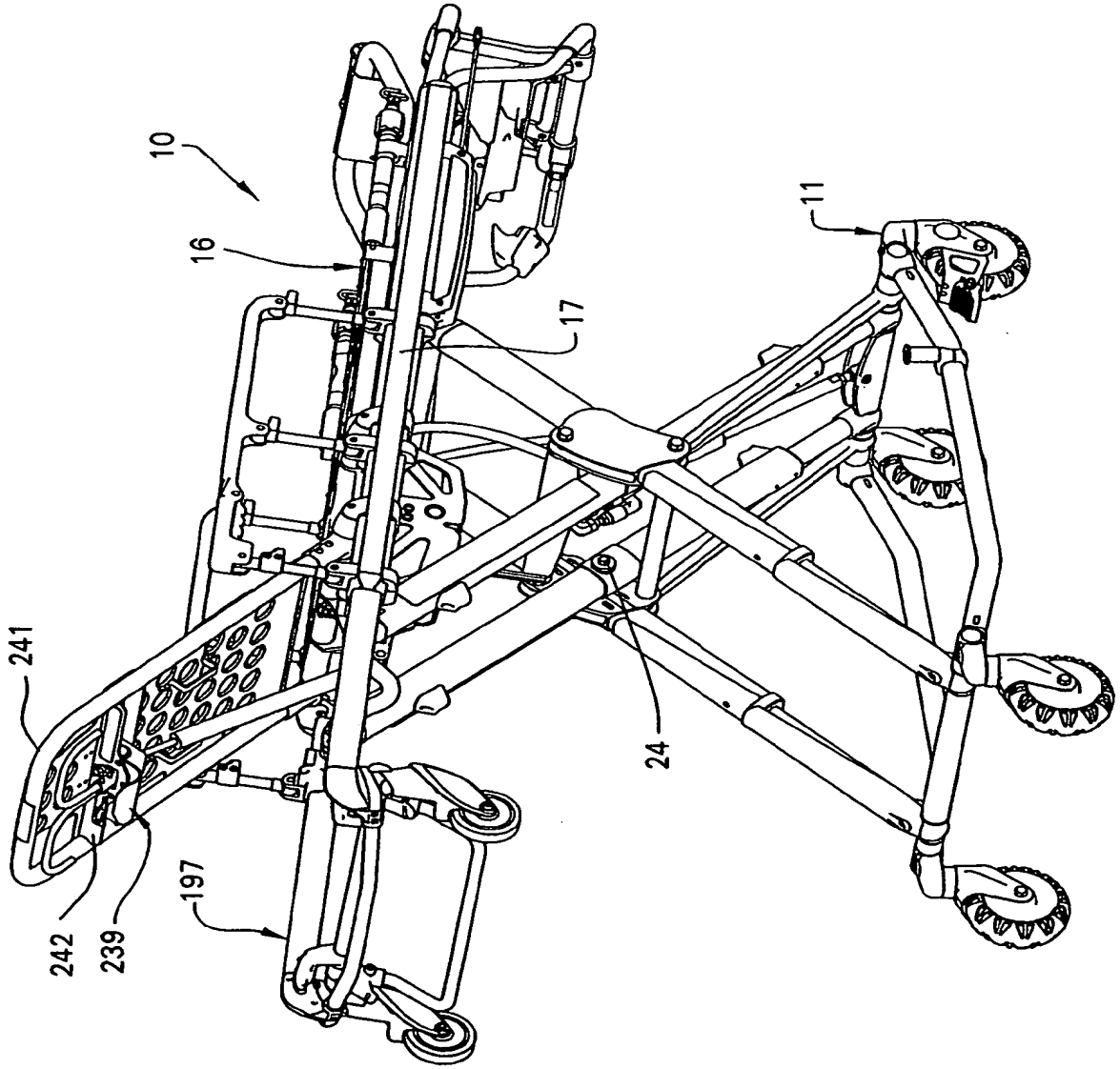
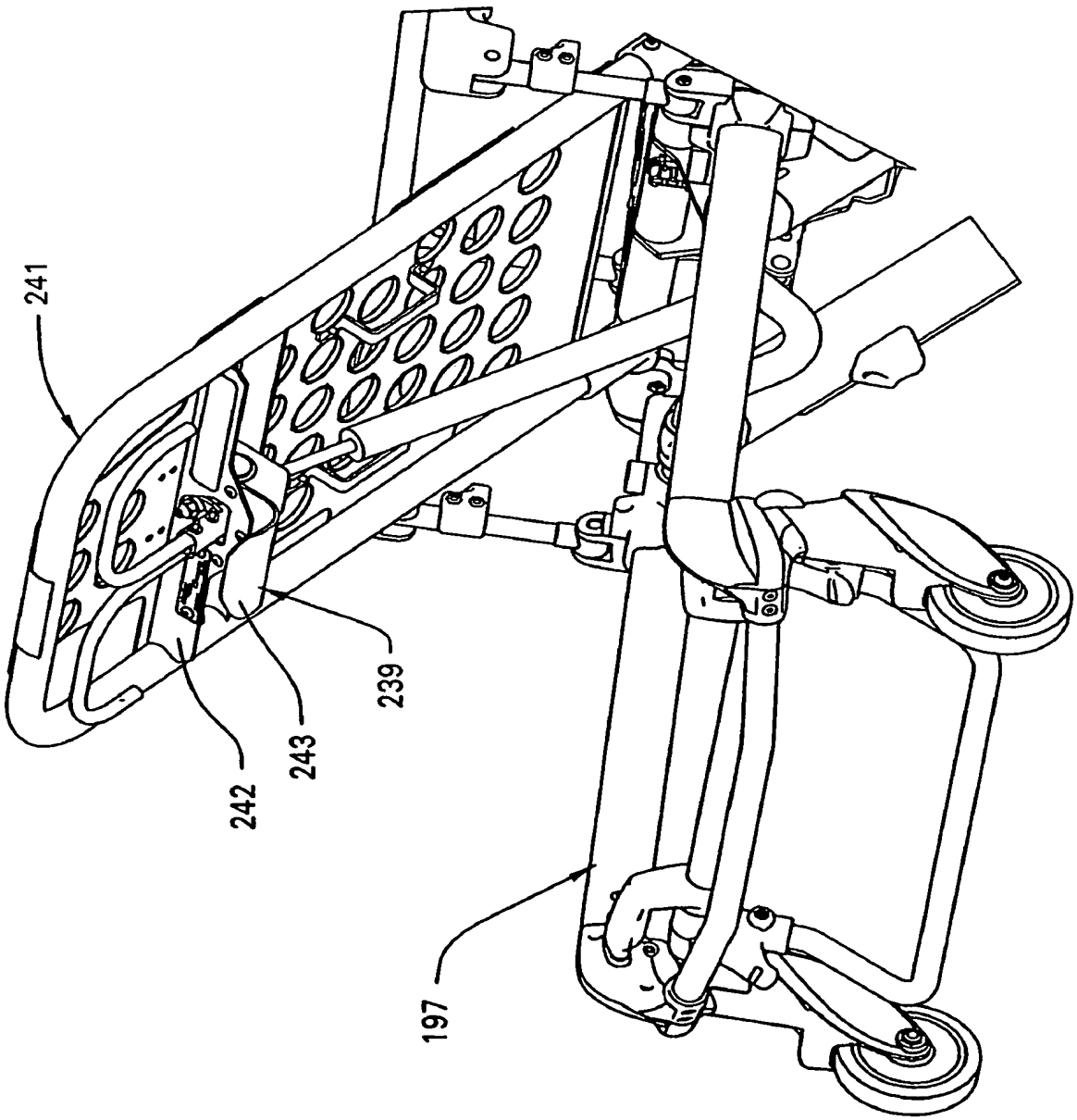


FIG. 51



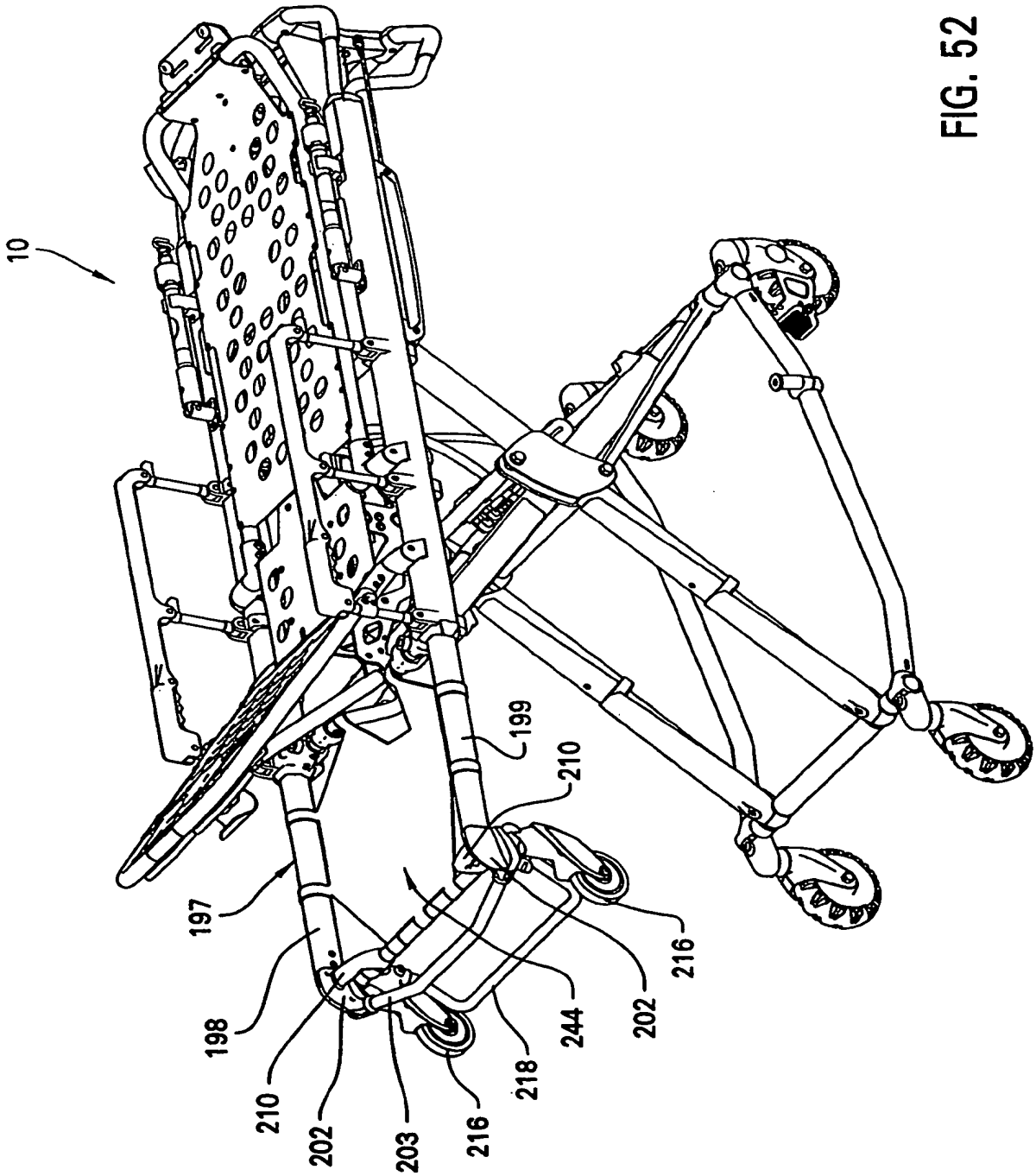



FIG. 52

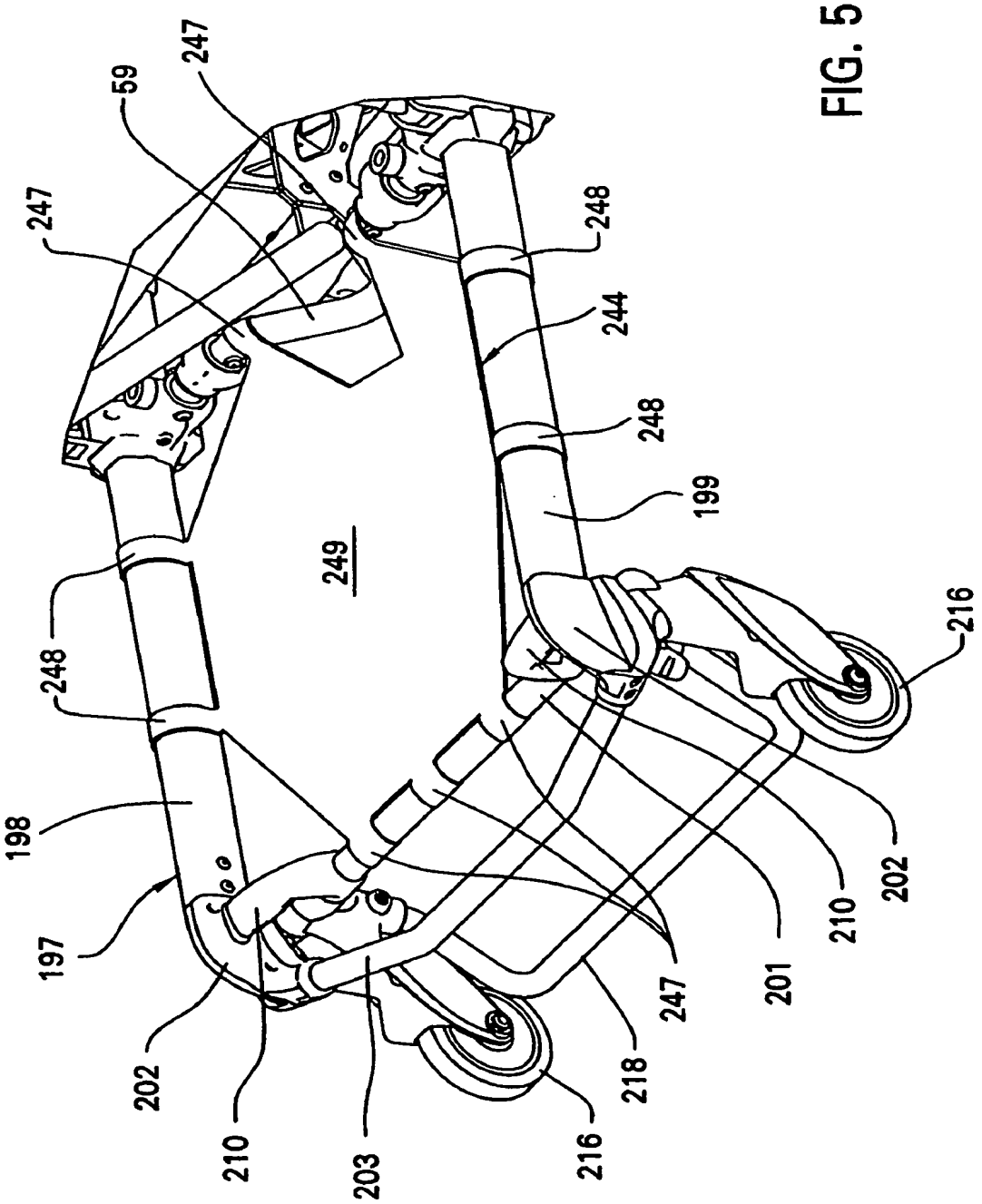

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FIG. 53

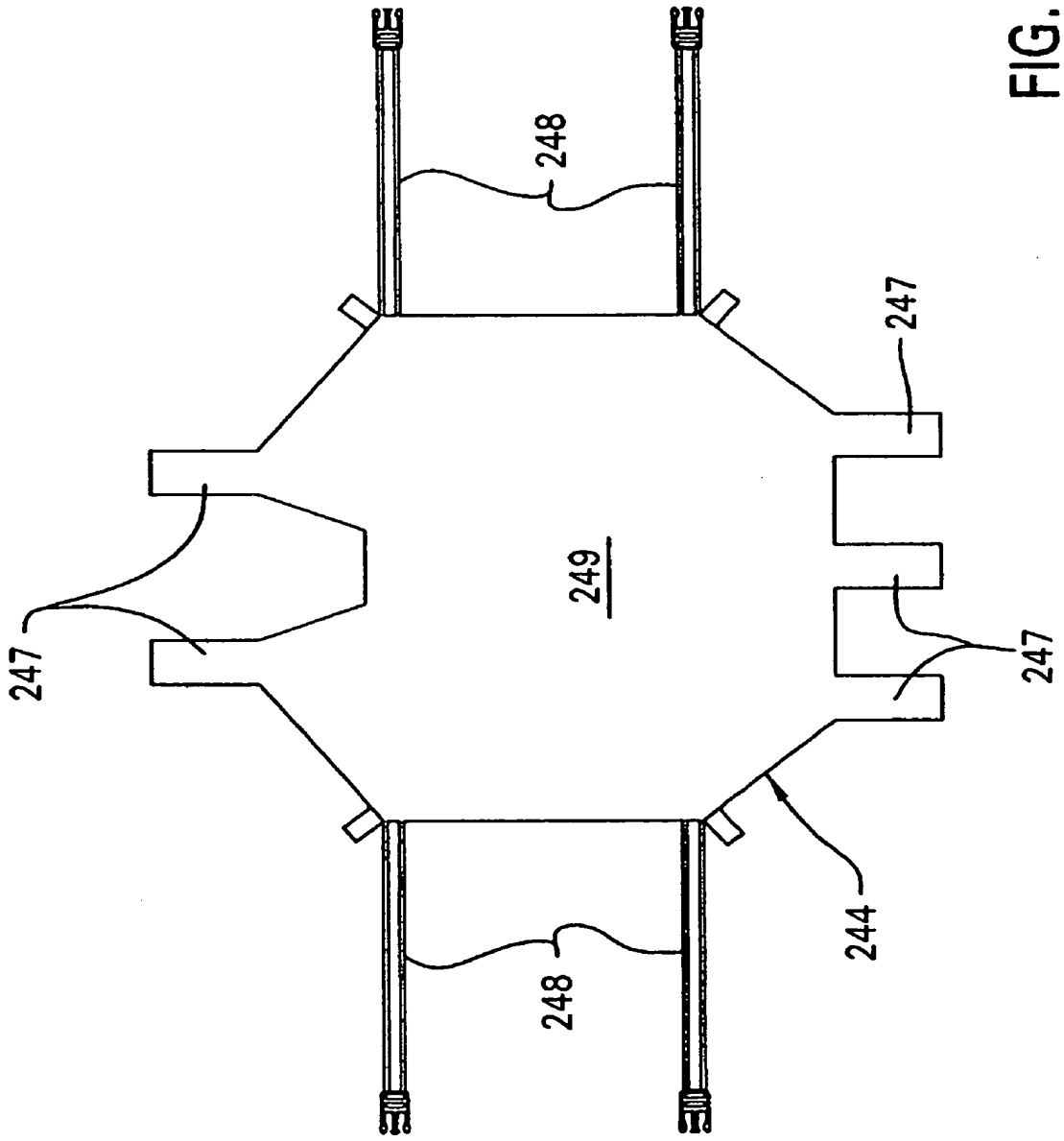



FIG. 54

FIG. 55

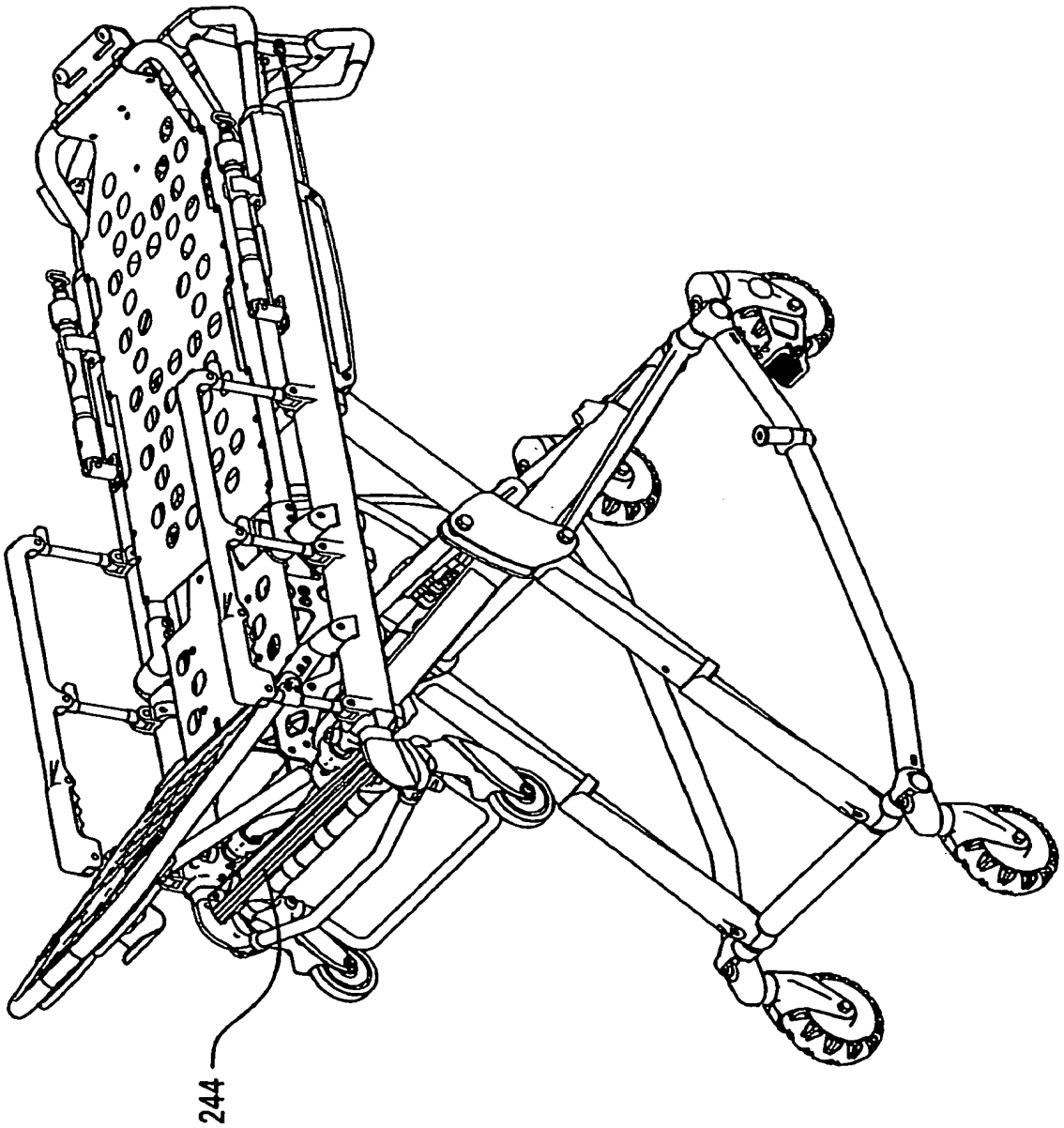
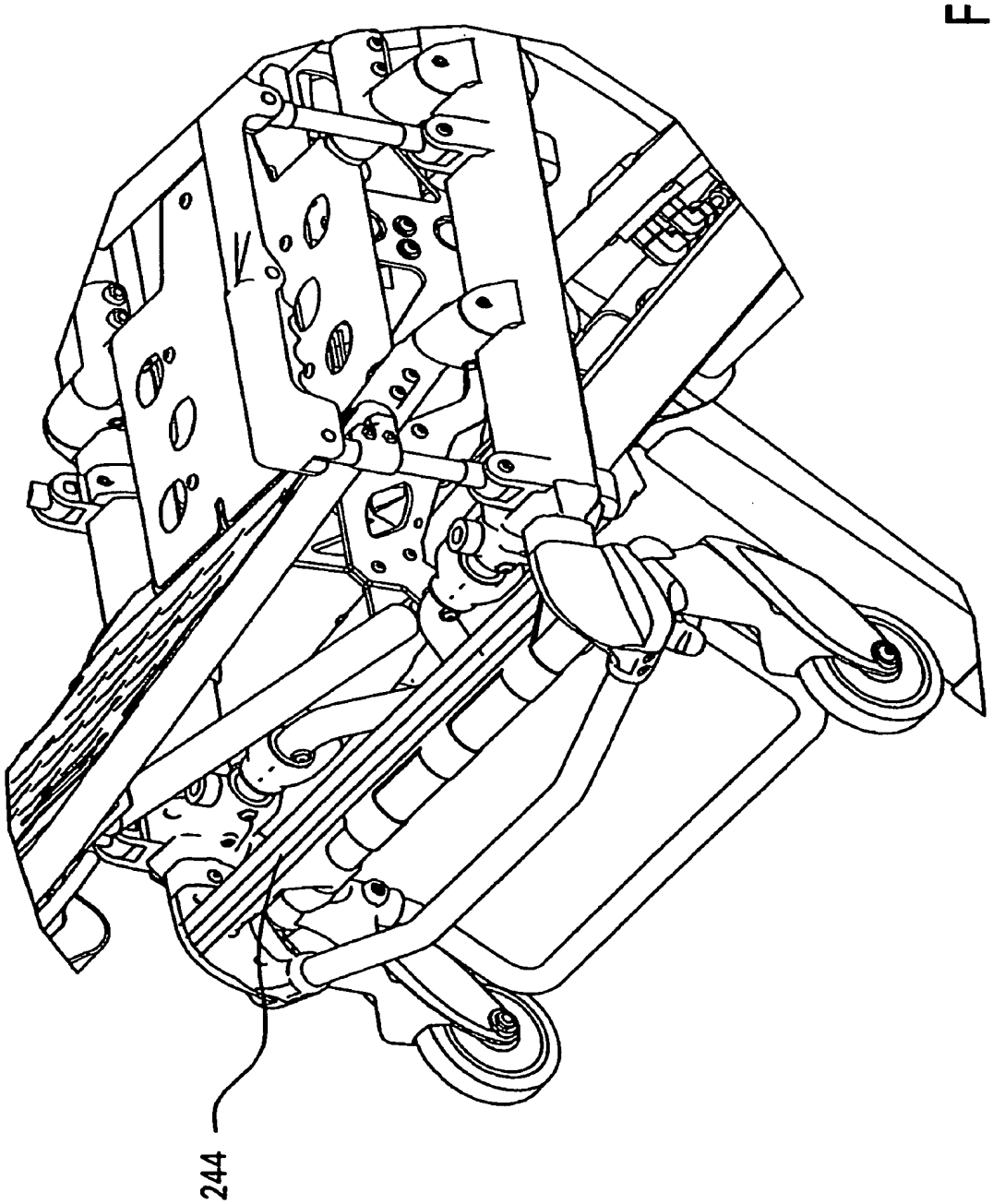


FIG. 56



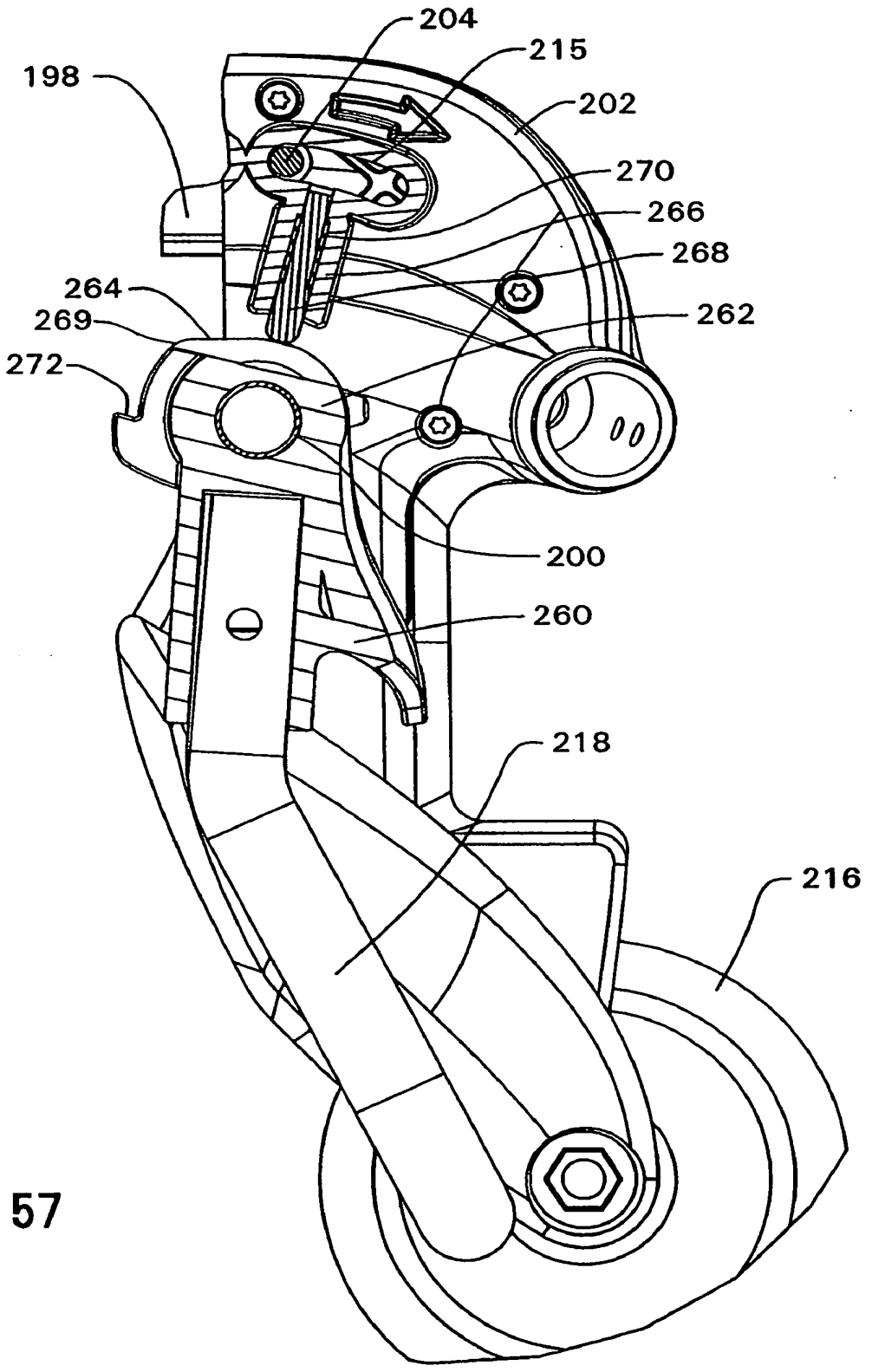



FIG. 57

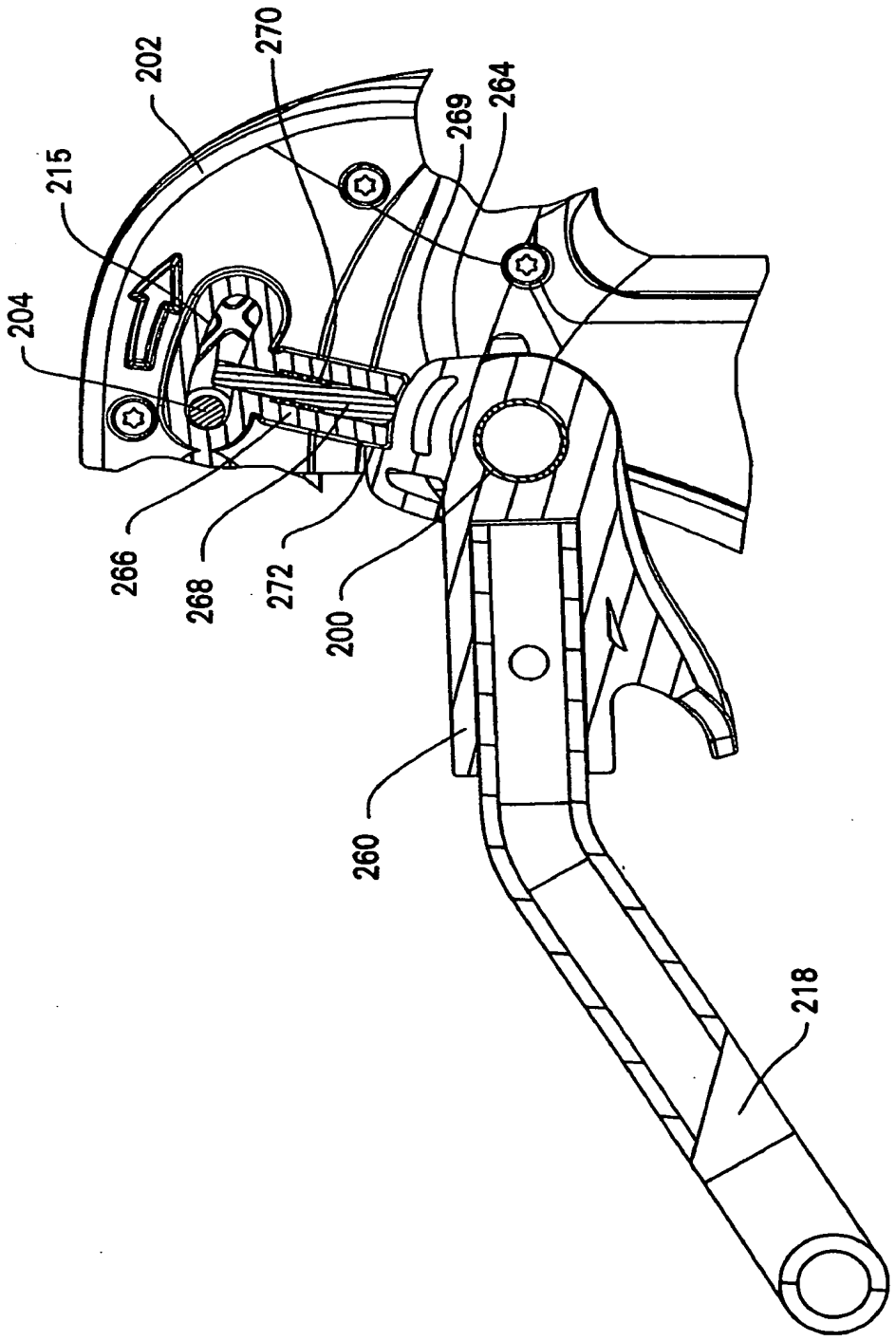



FIG. 58

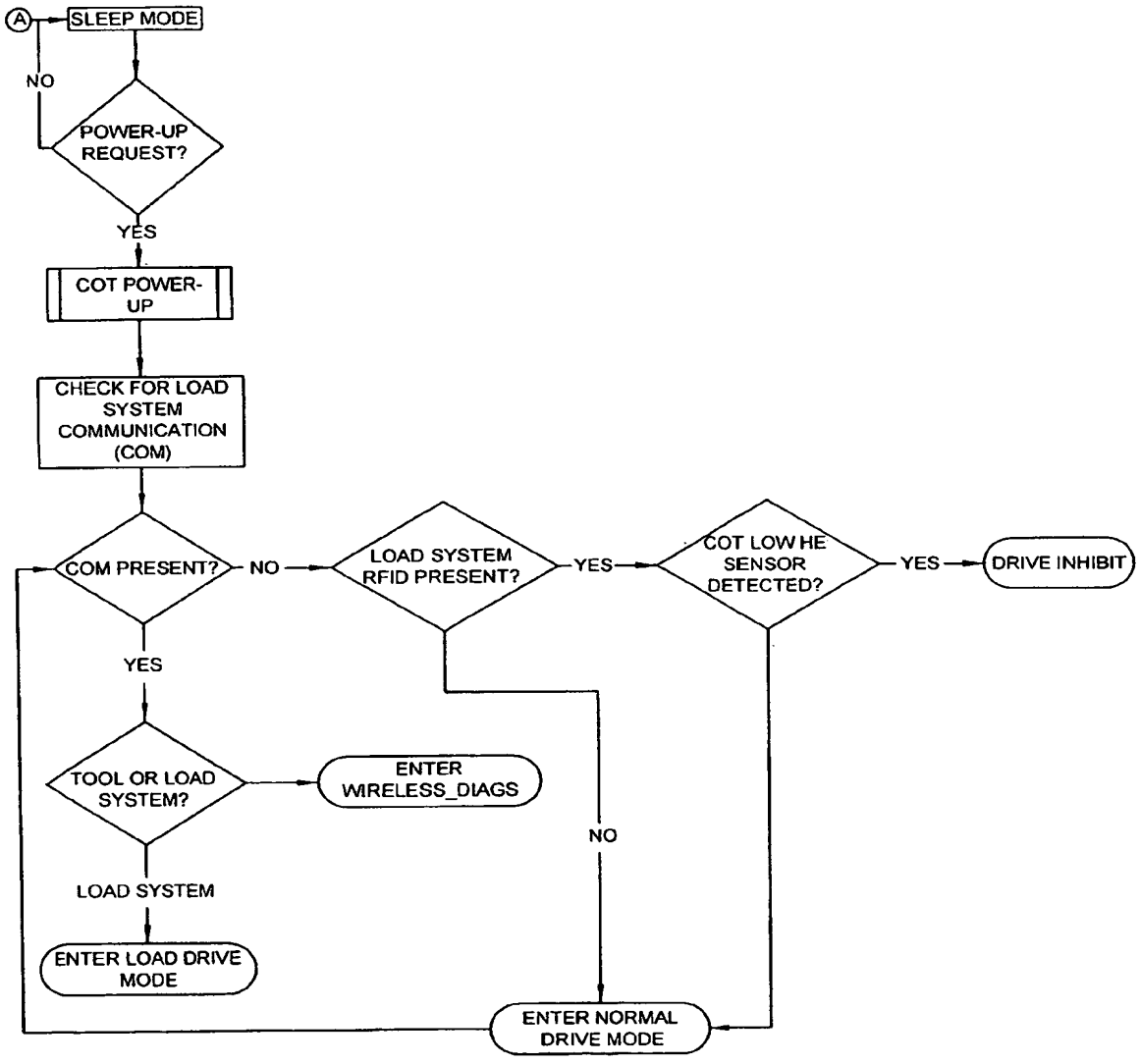

A
SLEEP MODE
NO
POWER-UP REQUEST?
YES
COT POWER-UP
CHECK FOR LOAD SYSTEM COMMUNICATION (COM)
COM PRESENT?
NO
LOAD SYSTEM RFID PRESENT?
YES
COT LOW HE SENSOR DETECTED?
YES
DRIVE INHIBIT
YES
TOOL OR LOAD SYSTEM?
ENTER WIRELESS_DIAGS
NO
LOAD SYSTEM
ENTER LOAD DRIVE MODE
ENTER NORMAL DRIVE MODE

FIG. 59

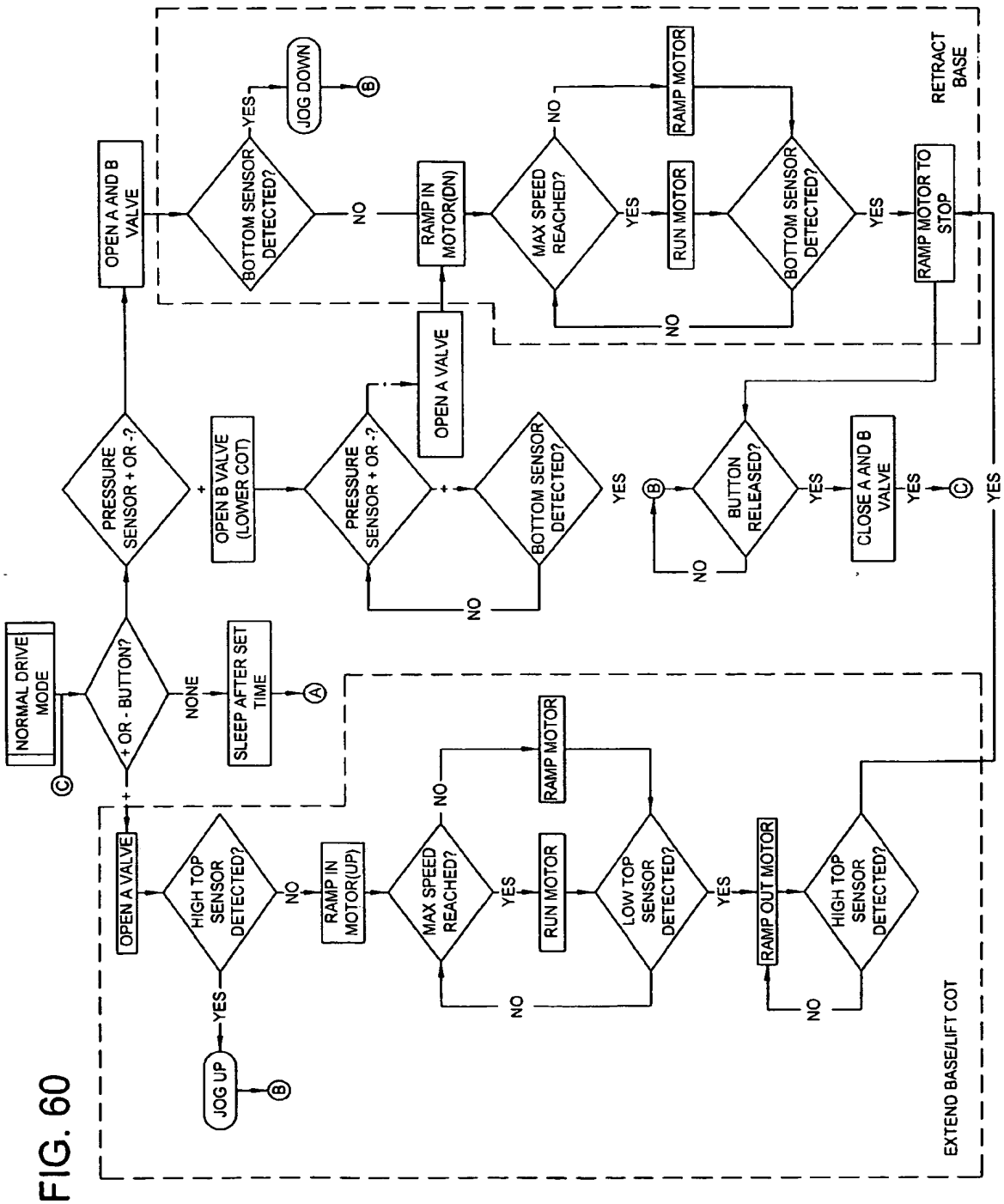

NORMAL DRIVE MODE
+ OR - BUTTON?
NONE
SLEEP AFTER SET TIME
A
PRESSURE SENSOR + OR -?
OPEN A AND B VALVE
BOTTOM SENSOR DETECTED?
YES
JOG DOWN
B
NO
RAMP IN MOTOR(DN)
MAX SPEED REACHED?
NO
RAMP MOTOR
YES
RUN MOTOR
BOTTOM SENSOR DETECTED?
YES
RAMP MOTOR TO STOP
RETRACT BASE
NO
OPEN A VALVE
OPEN B VALVE (LOWER COT)
PRESSURE SENSOR + OR -?
OPEN A VALVE
BOTTOM SENSOR DETECTED?
YES
NO
B
BUTTON RELEASED?
YES
NO
CLOSE A AND B VALVE
YES
C
YES
OPEN A VALVE
HIGH TOP SENSOR DETECTED?
NO
RAMP IN MOTOR(UP)
MAX SPEED REACHED?
NO
RAMP MOTOR
YES
RUN MOTOR
LOW TOP SENSOR DETECTED?
YES
RAMP OUT MOTOR
HIGH TOP SENSOR DETECTED?
NO
YES
JOG UP
B
EXTEND BASE/LIFT COT

FIG. 60

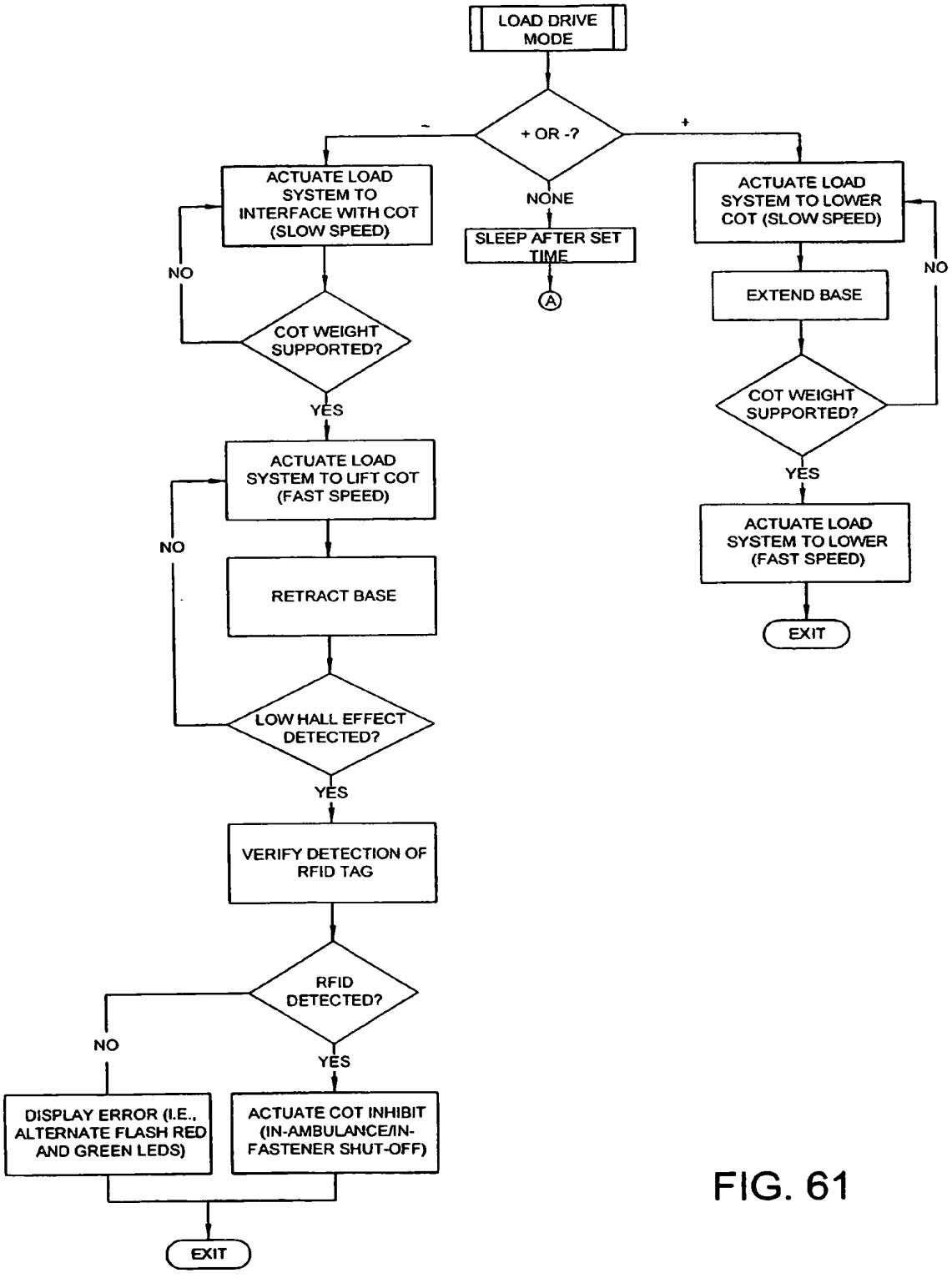

LOAD DRIVE MODE
+ OR -?
-
+
NONE
ACTUATE LOAD SYSTEM TO INTERFACE WITH COT (SLOW SPEED)
SLEEP AFTER SET TIME
A
ACTUATE LOAD SYSTEM TO LOWER COT (SLOW SPEED)
NO
COT WEIGHT SUPPORTED?
EXTEND BASE
NO
COT WEIGHT SUPPORTED?
YES
ACTUATE LOAD SYSTEM TO LIFT COT (FAST SPEED)
ACTUATE LOAD SYSTEM TO LOWER (FAST SPEED)
NO
RETRACT BASE
EXIT
LOW HALL EFFECT DETECTED?
YES
VERIFY DETECTION OF RFID TAG
RFID DETECTED?
NO
YES
DISPLAY ERROR (I.E., ALTERNATE FLASH RED AND GREEN LEDS)
ACTUATE COT INHIBIT (IN-AMBULANCE/IN-FASTENER SHUT-OFF)
EXIT

FIG. 61

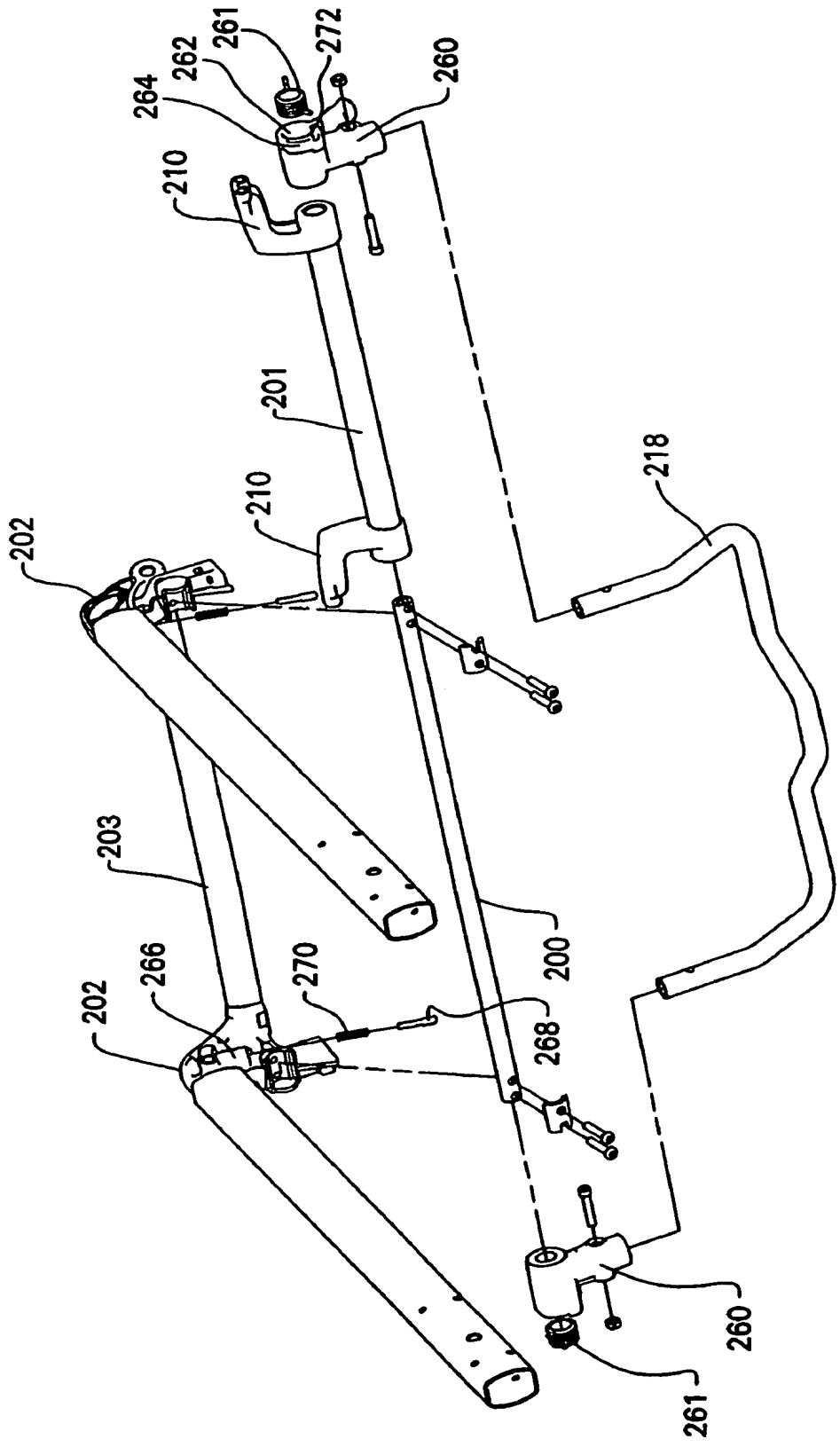

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FIG. 62

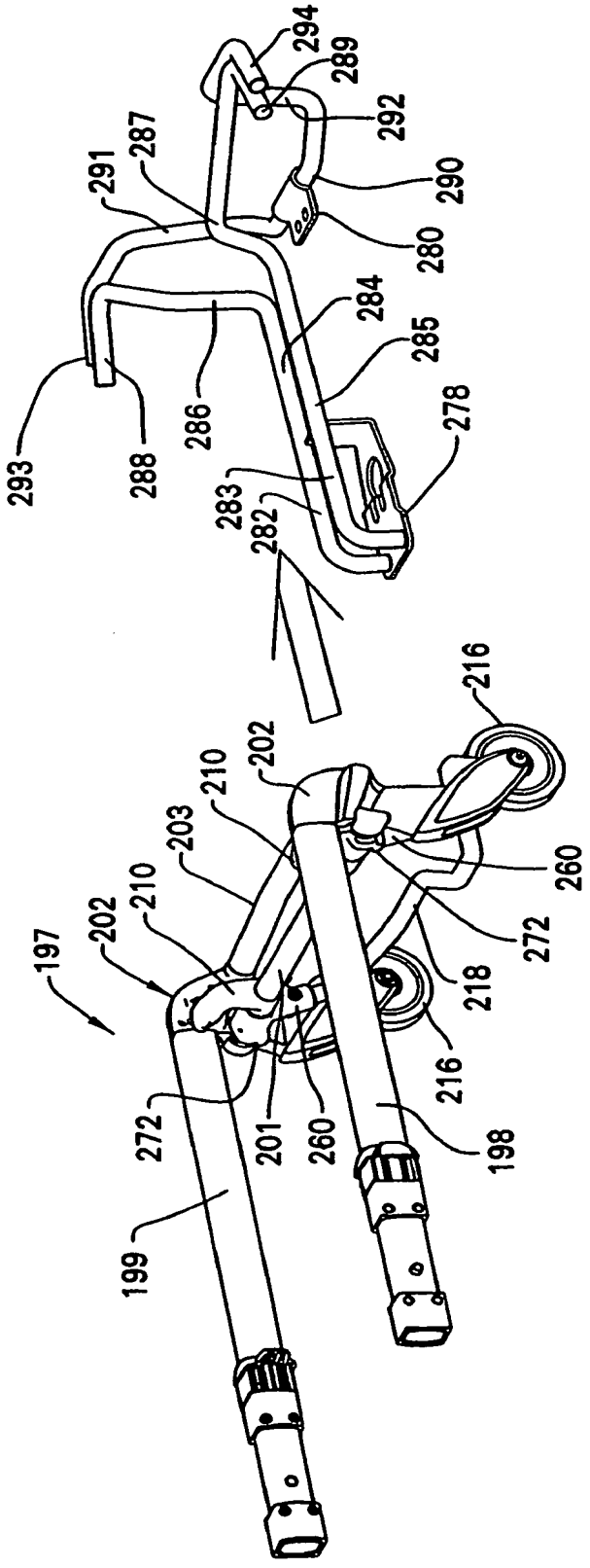

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FIG. 63

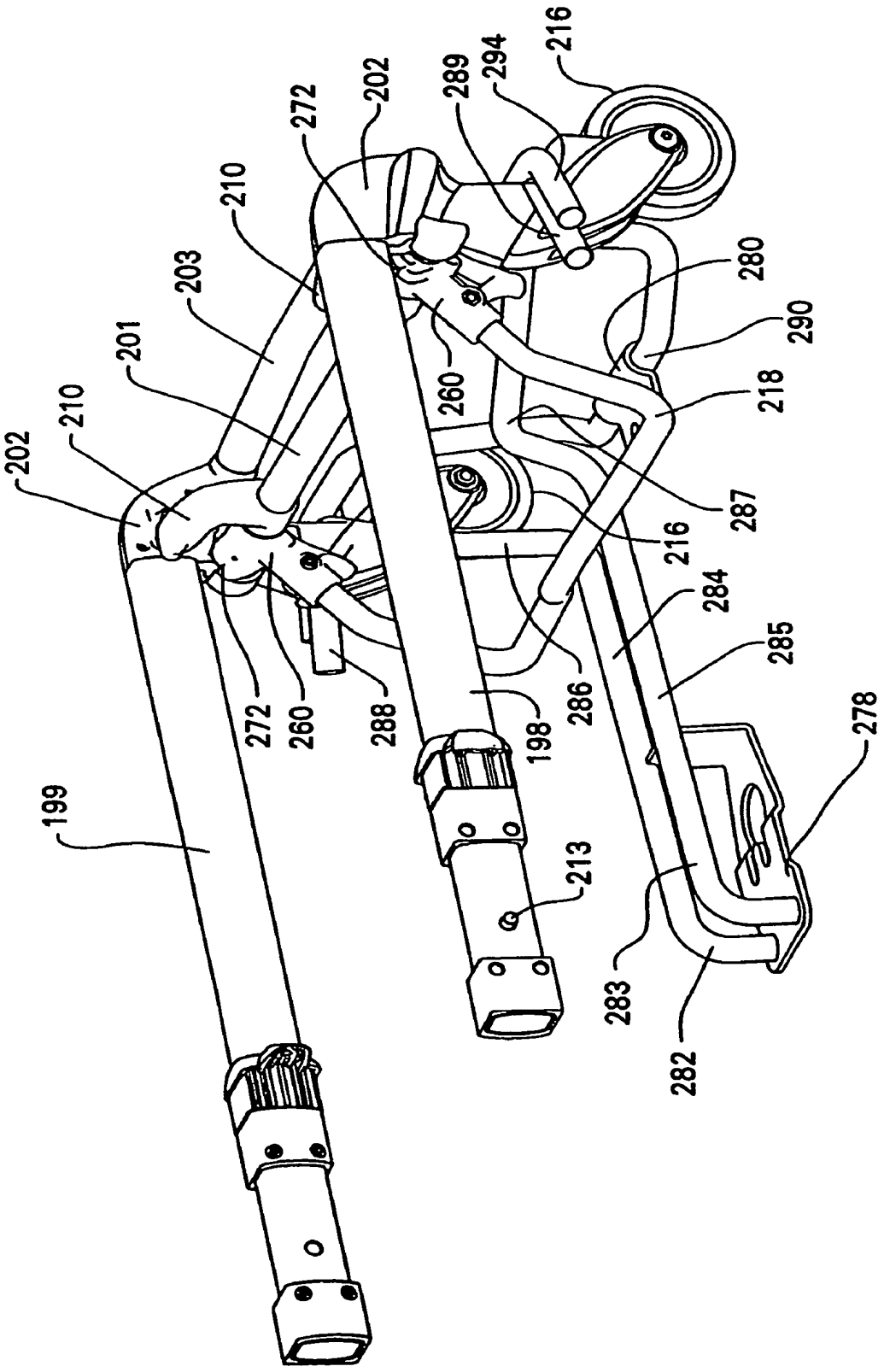

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FIG. 64

PATENT APPLICATION

Express Mail Label No.: EM 573 689 505 US

IN THE U.S. PATENT AND TRADEMARK OFFICE

May 9, 2011

Applicant(s): Clifford E. LAMBARTH

For: AMBULANCE COT WITH PINCH SAFETY FEATURE

Serial No.: Unknown Group: Unknown

Confirmation No.: Unknown

Filed: Unknown Examiner: Unknown

International Application No.: n/a

International Filing Date: n/a

Atty. Docket No.: 3007.P0418US

Mail Stop Reissue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT BEFORE FIRST OFFICE ACTION

Sir:

Prior to issuance of the first Office Action in the above-identified application, kindly enter the following:

(Please see following pages.)

## Amendments to the Specification

IN THE WRITTEN DESCRIPTION

Between the title of the application and the heading CROSS REFERENCE TO RELATED APPLICATIONS, insert the following paragraph:

This application is a reissue application of U.S. Serial No 12/002 958, filed December 19, 2007, now U.S. Patent No. 7 540 047, issued on June 2, 2009.

## Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

## Listing of Claims

1. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said ~~base~~ litter frame and said ~~litter~~ base frame in response to said litter frame becoming proximate said base frame; and

wherein said litter~~base~~ frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first crosswise member, and wherein said base~~litter~~ frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base~~litter~~ frame and being oriented in a path of movement of

said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

2. (Original) The ambulance cot according to claim 1, wherein said first and second mounts each engage and rest upon respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

3. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter~~base~~ frame, said first mount being configured to ~~respectively~~ engage said base frame in response to said litter frame becoming proximate said base frame; and

wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

4. (Original) The ambulance cot according to claim 3, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said base frame.

5. (Currently Amended) An ambulance cot, comprising:

a base frame;

a litter frame; and

an X-frame support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base~~litter~~ frame, said first mount being configured to ~~respectively~~ engage said litter frame in response to said litter frame becoming proximate said base frame; and

wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

6. (Original) The ambulance cot according to claim 5, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said litter frame.

Please add new Claims 7 - 15.

7. An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said litter frame and said base frame in response to said litter frame becoming proximate said base frame.

8. The ambulance cot according to claim 7, wherein said litter frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first crosswise member, and wherein said base frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base frame and being oriented in a

path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

9. The ambulance cot according to claim 8, wherein said first and second mounts each engage and rest upon respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

10. An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to engage said litter frame in response to said litter frame becoming proximate said base frame.

11. The ambulance cot according to claim 10, wherein said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails

and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

12. The ambulance cot according to claim 11, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said base frame.

13. An elongate ambulance cot having a head end and a foot end, comprising:

a base frame having a first lateral width;

a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and

an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to engage said base frame in response to said litter frame becoming proximate said base frame.

14. The ambulance cot according to claim 13, wherein said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as

said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

15. The ambulance cot according to claim 14, wherein said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said litter frame.

**REMARKS**

This application is a reissue application filed pursuant to the provisions of 35 USC 251 and is being presented to correct errors or defects contained in the claims of U.S. Patent No. 7 540 047 which were made without any deceptive intent and which, as a result of the errors or defects in the claims, renders the patent partially inoperative by reason of patentee claiming more or less than he had a right to claim in the patent. Claims 1, 3 and 5 of the patent are amended. Dependent Claims 2, 4 and 6 are pending. Claims 7-15 are newly presented.

Claim 1 is being amended to correct a mix-up between (1) the "at one least one first crosswise member" on the "base" frame and (2) the "at least one second crosswise member" on the "litter" frame. As a result, Claim 1 in the patent does not read onto the disclosed structure. Claim 1 is being amended to correctly recite that the " litter frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first crosswise member" as well recite that the "base frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member".

Claim 3 is being amended to correct and erroneous recitation that "at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame". Amended Claim 3 now correctly recites that "at least one of said pair of frame members having a

first mount oriented between said mid-length thereof and said litter frame". The word "respectively" has been deleted.

Claim 5 is being amended to correct and erroneous recitation that "at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame". Amended Claim 5 now correctly recites that "at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame". The word "respectively" has been deleted.

Claims 7-15 are newly presented and are narrower than any claim presented for examination during the application stage leading to the grant of U.S. Patent No. 7 540 047.

Claim 7 requires that the ambulance cot has a first lateral width and that the litter frame has a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of lead wheels adjacent an opposite end with an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said base frame and said litter frame in response to said litter frame becoming proximate said base frame.

Claim 8 is dependent on claim 7 and limits Claim 7 to require that said litter frame has longitudinally extending

side rails and at least one first crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first crosswise member, and wherein said base frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

Claim 9 depends from Claim 8 and limits Claim 8 to require that said first and second mounts each engage and rest upon respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

Independent claim 10 requires that a base frame having a first lateral width; a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to respectively engage said base frame in response to said litter frame becoming proximate said base frame.

Claim 11 is dependent on claim 10 and limits Claim 10 to require that said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

Claim 12 is dependent on claim 11 and limits Claim 11 to require that said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said base frame.

Independent claim 13 requires that a base frame having a first lateral width; a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to respectively engage said litter frame in response to said litter frame becoming proximate said base frame.

Claim 14 is dependent on claim 13 and limits Claim 13 to require that said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base

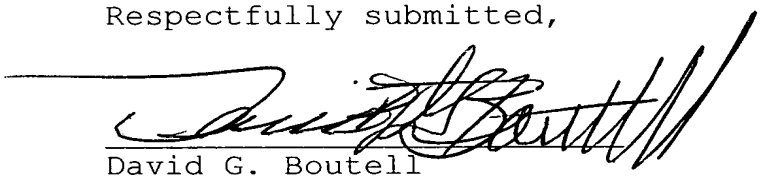
frame so that said first mount engages and rests upon said at least one crosswise member.

Claim 15 is dependent on claim 14 and limits Claim 14 to require that said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said litter frame.

Also enclosed herewith for the Examiner's review is an Information Disclosure Statement containing a list of documents which were not cited during the prosecution of U.S. Patent 7 540 047. These documents were cited by the defendant to the court in a patent infringement law suit brought by the Assignee of Record, Stryker Corporation against the defendant Monster Medic, Inc. based on the claims in U.S. Patent No. 7 398 571 resulting from the parent application to U.S. Patent No. 7 540 047. In the meantime, on January 28, 2011, the court entered a Stipulated Consent Judgment terminating that litigation. This prior art is believed to be not relevant to the claims now before the Examiner.

Favorable consideration is respectfully solicited.

Respectfully submitted,



David G. Boutell

DGB/kc

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| Brian R. Tumm | Reg. No. 36 328 |
| Heon Jekal | Reg. No. 64 219 |
| Eugene J. Rath III | Reg. No. 42 094 |
| Dale H. Thiel | Reg. No. 24 323 |
| David G. Boutell | Reg. No. 25 072 |
| Sidney B. Williams, Jr. | Reg. No. 24 949 |


Encl: None

112.05/06

# REISSUE APPLICATION DECLARATION AND POWER OF ATTORNEY BY INVENTOR

I hereby declare that: My residence, post office address and citizenship are as stated below next to my name, I believe that I am the original, first and sole inventor of the subject matter which is described and claimed in Letters Patent No. 7 540 047 granted on June 2, 2009, and in the foregoing specification for which invention I solicit a reissue patent.

I hereby state that I have reviewed and understand the contents of the foregoing specification, including the claims.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

## PRIORITY CLAIM

I do not claim foreign priority benefits under Title 35, United States Code, Section 119, of any foreign application(s) for patent or inventor's certificate.

I verily believe the original patent to be partly inoperative or invalid because of error without deceptive intent on the part of the applicant, by reason of patentee claiming more or less than he had a right to claim in the patent.

A first error or defect in the claims is that claim 1 in column 21, between lines 44-61, currently does not read onto the disclosed invention and now requires correction to recite that "said first and second mounts being configured to respectively engage said litter frame and said base frame in response to said litter frame becoming proximate said base frame, to additionally recite "said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails of said litter frame" and to additionally recite that "said base frame has

longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base frame".

A second error or defect in the claims is that claim 3 in column 22, between lines 17-22, currently does not read onto the disclosed invention and now requires correction to recite that "at least one of said pair of frame members having a first mount oriented between said mid-length and said litter frame, said first mount being configured to engage said base frame in response to said litter frame becoming proximate said base frame".

A third error or defect in the claims is that claim 5 in column 22, between lines 44-46, currently does not read onto the disclosed invention and now requires correction to recite that "at least one of said pair of frame members having a first mount oriented between said mid-length and said base frame, said first mount being configured to engage said litter frame in response to said litter frame becoming proximate said base frame"

A fourth error or defect in the claims is that independent claim 7 was not presented to require that the ambulance cot has a first lateral width and that the litter frame has a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end with an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said frame members each having opposite ends respectively secured to one of said base frame and said

litter frame, said at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said at least one of said pair of frame members having a second mount oriented between said mid-length thereof and said litter frame, said first and second mounts being configured to respectively engage said litter frame and said base frame in response to said litter frame becoming proximate said base frame.

A fifth error or defect in the claims is that claim 8 dependent on claim 7 was not presented which requires that said litter frame has longitudinally extending side rails and at least one first crosswise member interconnecting said side rails of said litter frame and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one first crosswise member, and wherein said base frame has longitudinally extending side rails and at least one second crosswise member interconnecting said side rails of said base frame and being oriented in a path of movement of said second mount as said litter frame becomes proximate said base frame so that said second mount engages and rests upon said at least one second crosswise member.

A sixth error or defect in the claims is that claim 9 dependent on claim 8 was not presented which requires that said first and second mounts each engage and rest upon respective ones of said at least one first and second crosswise members and between the respective said side rails of said litter frame and said base frame.

A seventh error or defect in the claims is that independent claim 10 not presented which requires that a base frame having a first lateral width; a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and an

X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said base frame, said first mount being configured to engage said litter frame in response to said litter frame becoming proximate said base frame.

An eighth error or defect in the claims is that claim 11 dependent on claim 10 was not presented which requires that said litter frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

A ninth error or defect in the claims is that claim 12 dependent on claim 11 was not presented which requires that said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said base frame.

A tenth error or defect in the claims is that independent claim 13 was not presented which requires that a base frame having a first lateral width; a litter frame having a second lateral width and a manually engageable handle adjacent one end configured to facilitate a manual lifting of said one end and a set of load wheels adjacent an opposite end; and an X-frame support mechanism having a third lateral width less than said first and second widths, said support mechanism

interconnecting said base frame and said litter frame and being configured to support said litter frame in one of a plurality of positions relative to said base frame, said support mechanism including at least one pair of frame members pivotally secured to each other proximate the mid-length thereof, said at least one pair of frame members each having opposite ends respectively secured to one of said base frame and said litter frame, at least one of said pair of frame members having a first mount oriented between said mid-length thereof and said litter frame, said first mount being configured to engage said base frame in response to said litter frame becoming proximate said base frame.

An eleventh error or defect in the claims is that claim 14 dependent on claim 13 was not presented which requires that said base frame has longitudinally extending side rails and at least one crosswise member interconnecting said side rails and being oriented in a path of movement of said first mount as said litter frame becomes proximate said base frame so that said first mount engages and rests upon said at least one crosswise member.

A twelfth error or defect in the claims is that claim 15 dependent on claim 14 was not presented which requires that said first mount engages and rests upon said at least one crosswise member and between the respective said side rails of said litter frame.

The above-mentioned errors arose without any fraudulent or deceptive intent on my part.

POWER OF ATTORNEY

I hereby appoint the following attorneys to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

Terryence F. Chapman (Reg. No. 32 549), Mark L. Maki (Reg. No. 36 589), Liane L. Churney (Reg. No. 40 694), Brian R. Tumm (Reg. No. 36 328), Heon Jekal (Reg. No. 64 219), Eugene J. Rath III (Reg. No. 42 094), Dale H. Thiel (Reg. No.

24 323), David G. Boutell (Reg. No. 25 072) and Sidney B. Williams, Jr. (Reg. No. 24 949), all of 2026 Rambling Road, Kalamazoo, Michigan 49008-1631.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Sole Inventor's Signature Clifford E Lambarth Date 4/1/2011

Full name of sole inventor: Clifford E. Lambarth
Residence: Portage, Michigan
Citizenship: United States
Post Office Address: 10801 Cora Drive, Portage, MI 49002

REISSUE APPLICATION BY THE INVENTOR, SURRENDER OF PATENT
(37 CFR 1.178)

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

The undersigned applicant of the accompanying reissue application for the reissue of Letters Patent for the improvement in AMBULANCE COT WITH PINCH SAFETY FEATURE, Patent No. 7 540 047, granted to him on June 2, 2009, of which Stryker Corporation is now sole owner by assignment, and on whose behalf and with whose assent the accompanying application is made, hereby surrenders said Letters Patent, which is enclosed herewith.

Filed herewith is a certificate under 37 CFR 3.73(b).

Dated: 4/13/2011

Clifford E. LAMBARTH

ASSENT OF ASSIGNEE TO REISSUE

The undersigned, assignee of the entire interest in the above-mentioned Letters Patent, hereby assents to the accompanying application.

STRYKER CORPORATION

Dated: 4/21/11

By: Timothy J. Scannell

Title: Group President, MedSurg & Spine

(00182655.DOC)

STATEMENT UNDER 37 CFR 3.73(b)

Applicant : Clifford E. Lambarth
Patent No.: U.S. Patent No. 7 540 047
Issue Date: June 2, 2009
Entitled : AMBULANCE COT WITH PINCH SAFETY FEATURE

Stryker Corporation, a corporation, states that it is the assignee of the entire right, title and interest in the patent identified above by virtue of an assignment from the inventor of the patent identified above. The assignment was recorded in the Patent and Trademark Office at Reel 020694, Frame 0779, on March 25, 2008.

The undersigned (whose title is supplied below) is empowered to sign this statement on behalf of the assignee.

Dated: 4/21/11

Signature

Timothy J. Scannell
Typed or Printed Name

Group President, MedSurg & Spine
Title

{00182656.DOC}

PATENT APPLICATION

IN THE U.S. PATENT AND TRADEMARK OFFICE

May 9, 2011

Express Mail No. EM 573 689 505 US
Applicant(s): Clifford E. LAMBARTH
For: AMBULANCE COT WITH PINCH SAFETY FEATURE
Serial No.: Unknown Group: Unknown
Confirmation No.: Unknown
Filed: Unknown Examiner: Unknown
Atty. Docket No.: 3007.P0418US

Mail Stop Reissue
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Sir:

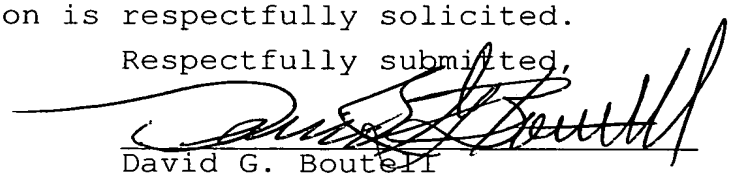
In compliance with the provisions of Rules 1.97(b)(1) and 1.98, enclosed herewith is Form PTO-1449 and one copy of each non-US patent/publication document listed thereon.

The undersigned has not included on the enclosed Form PTO-1449 the references cited during the prosecution of U.S. Patent No. 7 540 047 (namely, the patent which is the subject of this reissue application).

In addition, the references identified on Form PTO-1449 are believed to be distinguishable from the claimed invention. Accordingly, further comment at this point in time should not be necessary.

Further consideration is respectfully solicited.

Respectfully submitted,



DGB/kc David G. Boutell

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Brian R. Tumm Reg. No. 36 328
Heon Jekal Reg. No. 64 219
Eugene J. Rath III Reg. No. 42 094
Dale H. Thiel Reg. No. 24 323
David G. Boutell Reg. No. 25 072
Sidney B. Williams, Jr. Reg. No. 24 949

Encl: Form PTO-1449 (8 pages)
One copy of each non-US patent/publication document

110.10/07

{00185317.DOC}

Express Mail Label No.: EM 573 689 505 US

| INFORMATION DISCLOSURE CITATION | Applicant: Clifford E. LAMBARTH | |
|---|---|---|
| | Ser.No.: Unknown | Filed: Unknown |
| | Conf. No.: Unknown | Atty. Docket No.: 3007.P0418US |
| | Group: Unknown | Date: May 9, 2011 |

U.S. PATENT DOCUMENTS

| Examiner Initials* | Cite No. | Document Number - Kind Code | Publication Date MM-DD-YYYY | Name of Patentee or Applicant |
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| EXAMINER SIGNATURE | DATE CONSIDERED |
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| | |

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Express Mail Label No.: EM 573 689 505 US

| INFORMATION DISCLOSURE CITATION | Applicant: Clifford E. LAMBARTH | |
|---|---|---|
| | Ser.No.: Unknown | Filed: Unknown |
| | Conf. No.: Unknown | Atty. Docket No.: 3007.P0418US |
| | Group: Unknown | Date: May 9, 2011 |

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| Examiner Initials* | Cite No. | Document Number - Kind Code | Publication Date MM-DD-YYYY | Name of Patentee or Applicant |
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| EXAMINER SIGNATURE | DATE CONSIDERED |
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

Express Mail Label No.: EM 573 689 505 US

| INFORMATION DISCLOSURE CITATION | Applicant: Clifford E. LAMBARTH | |
|---|---|---|
| | Ser.No.: Unknown | Filed: Unknown |
| | Conf. No.: Unknown | Atty. Docket No.: 3007.P0418US |
| | Group: Unknown | Date: May 9, 2011 |

U.S. PATENT DOCUMENTS

| Examiner Initials* | Cite No. | Document Number - Kind Code | Publication Date MM-DD-YYYY | Name of Patentee or Applicant |
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Express Mail Label No.: EM 573 689 505 US

| INFORMATION DISCLOSURE CITATION | Applicant: Clifford E. LAMBARTH | |
|---|---|---|
| | Ser.No.: Unknown | Filed: Unknown |
| | Conf. No.: Unknown | Atty. Docket No.: 3007.P0418US |
| | Group: Unknown | Date: May 9, 2011 |

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(12) UK Patent Application (19) GB (11) 2 302 672 (13) A

(43) Date of A Publication 29.01.1997

(21) Application No 9513053.0

(22) Date of Filing 27.06.1995

(51) INT CL$^6$
A61G 1/02

(52) UK CL (Edition O )
B7B BTL2 B396

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(58) Field of Search
UK CL (Edition O ) B7B BTL2
INT CL$^6$ A61G 1/02 1/06
Online:WPI

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# (54) Ambulance trolley with powered scissor linkage

(57) The trolley is operator pushed and guided but is capable of being placed in the ambulance, or other vehicle, by one person unaided. The bottom wheeled chassis 1 is connected to a top patient carrying unit 2 by means of a powered scissor linkage 3. The actuator 4, which may be hydraulic or a low-voltage magnetic linear actuator, is controlled by push buttons 5 linked to a control unit 6 via a flying lead. When elevated, castors 7 attached to the front of the upper unit support most of the load on the vehicle's floor while the other end is supported by the attendant. After the chassis has been retracted the entire trolley is pushed, on its main castors 8, into the ambulance.

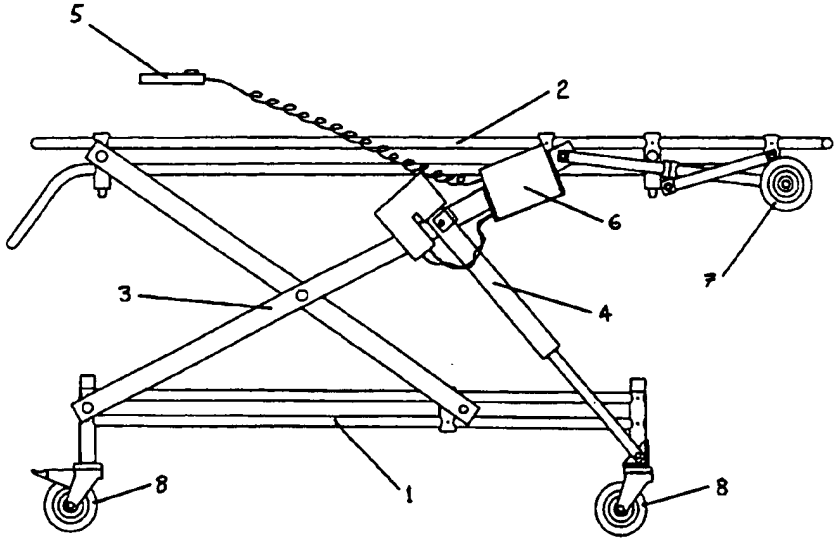



FIG. 2

GB 2 302 672 A

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

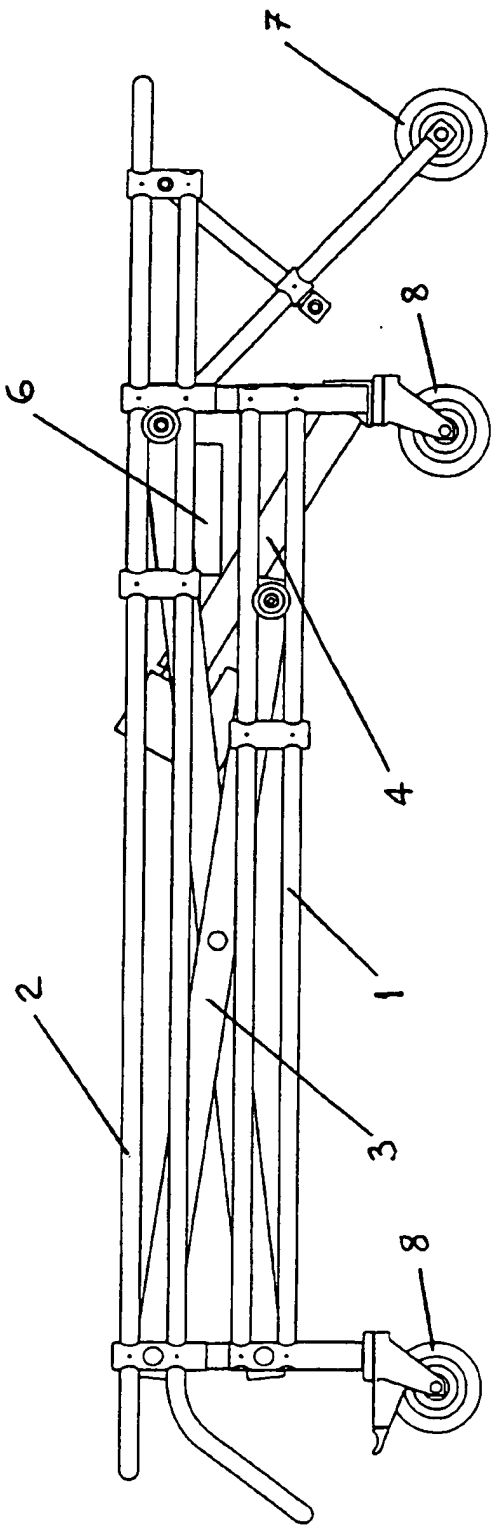



FIG. 1

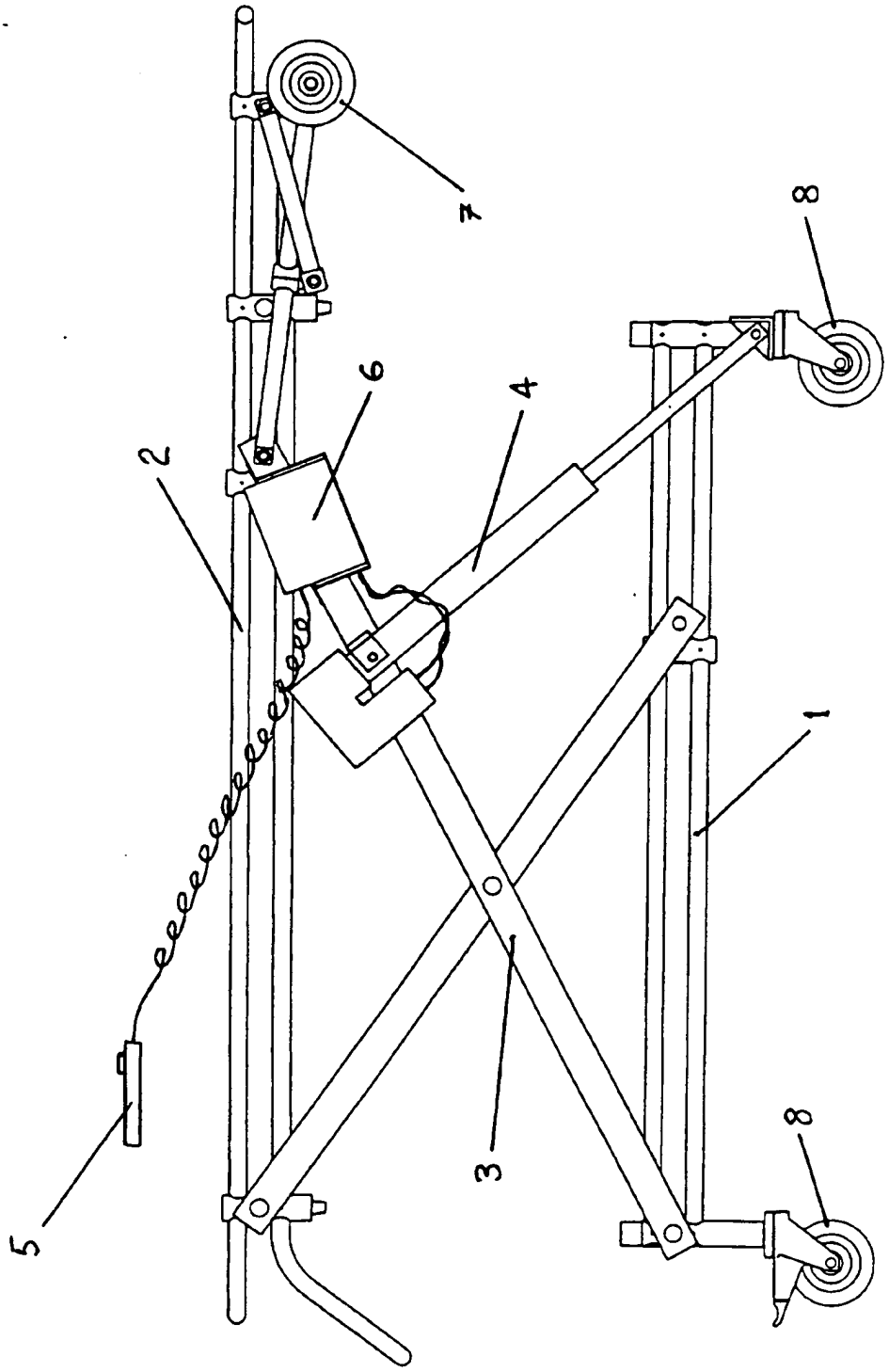



FIG. 2

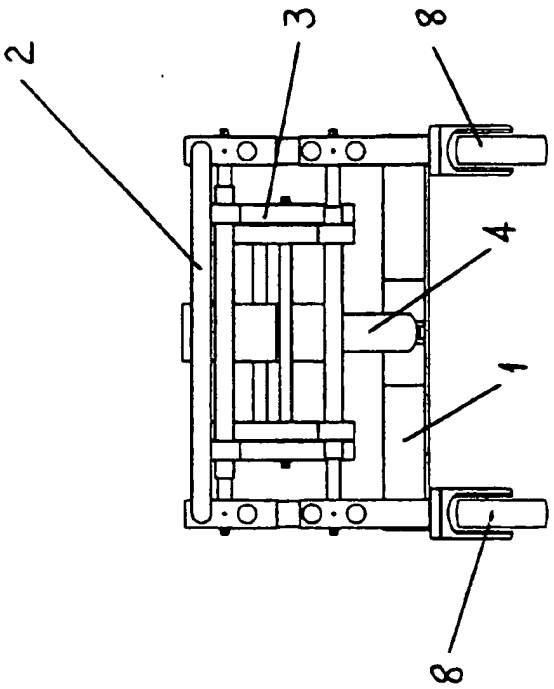



FIG. 3

EXHIBIT 1004 PAGE0308



2302672

# SEMI-AUTOMATIC AMBULANCE TROLLEY

This invention relates to an ambulance trolley and in particular to a trolley which,when in use with an injured or distressed patient,does not require to be physically lifted into or out of an ambulance or other vehicle.

Statistics in the U.K. reveal that 75% of all ambulance personnel who are injured at work invariably sustain back injuries whilst lifting or moving patients and much of this is due to the fact that the trollies currently in use require two attendants to lift it into or out of a vehicle and during these movements one person is liable to take an unduly high proportion of the load and are thereby strained or injured. The prior art reveals that much work has been reported in this area of automation of the ambulance stretcher trolley and pertinent examples are to be found in the teachings of U.S.5,063,624 which lists its innovation as a "twin jack bed" but which is simply a patient support base operated in the vertical or in the incline by hydraulic cylinders but restricted normally in use to areas with a plug-in mains electricity supply;or again in the teachings of the FR.2,546,402 where the trolly supports are rigidly held by inclined jambs whose bottom ends are articulated on the supports but whose top ends are guided in translation along the stretcher platform and can be locked at various positions by location into toothed racks and where the trolley can be manipulated single handed because as it is pushed against the tail-gate of a vehicle the reaction force starts to collapse and fold the supports and,as forward force is maintained,the

FERNO: IPR2024-00042
EXHIBIT 1004 PAGE0308

unit folds as it progresses into the vehicle to leave a simple platform whose undercarriage is now unused except for its castors or wheels. There is a need therefore for an ambulance trolley which is semi-automatic in the sense that it is operator pushed and guided but which is capable of being placed in the ambulance,or other vehicle,by one person unaided. Such a trolley is the subject of the present invention where there is provided a semi-automatic ambulance trolley comprising a wheeled bottom chassis member which is connected to a top member,on which the patient rests,by means of a hydraulically driven scissors linkage system and where the top member is equipped with a front set of castors so that when the driven scissors linkage raises the top member to a level which allows the top pair of castors to contact the ambulance,or other vehicle's,floor the weight of the whole patient occupied unit can be borne between the castors on the vehicle's floor and the attendant at the other end of the unit so that thereafter the attendant can activate a low voltage linear actuator which retracts the undercarriage into the folded or closed position thus allowing the unit to be fully pushed into the vehicle and then locked in position for travelling.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings inwhich:-

Figure 1 is a side elevation of the semi-automatic ambulance trolley in the folded or retracted position.

Figure 2 is a side elevation of the semi-automatic ambulance trolley in the raised

or extended position.

Figure 3 is an end elevation of the trolley in its raised or extended mode. Referring to the drawings the semi=automatic ambulance trolley comprises a bottom wheeled chassis member 1 which is connected to a top patient carrying unit 2 by means of a scissors-like linkage 3 which is powered by a low voltage magnetic linear actuator 4 so that the trolley can have its patient carrying unit 2 raised or lowered by activation of the flying lead buttons 5 which are linked to the control box 6. When in use the ambulance attendant places the patient on the trolley at its lowest level and then fastens the safety straps whereupon he can now press the "Raise" button on 5 so that the trolley is elevated to a height which is slightly above the ambulance floor height but where the castors 7 can rest on the floor so that the attendant can hold the rear of the trolley in a level position,with most of the load on the ambulance floor via the castors 7,retract the chassis member 1 and thereafter push the entire trolley into the ambulance where it can be locked into the vehicle in the normal ambulance safety manner. When the ambulance arrives at a hospital the trolley is removed from the vehicle by reversing the above procedure. When inside hospitals the trolley can be raised or lowered to suit the height of beds,couches or operating tables without the need to handle or pick-up the patient. Such trolleys can be fitted with safety rails and when in hospital,with the unit at the desired height,these rails can be lowered and the patient "slid" across to transfer to the required situation on the hospital's equipment.

In practice the unit is conveniently made from aluminium tube with the wheels 8 horizontally opposed with brakes and on anti-static tyres, whereas the front castors 7 are rubber on nylon and supported on a single axel. Although the unit can have its lifting and lowering actions powered by hydraulic cylinders it is preferred to use low voltage magnetic linear actuators for this purpose.

Paul Rixon

## CLAIMS

1. A Semi-Automatic Ambulance Trolley comprising a wheeled bottom chassis member which is connected to a top member, on which the patient rests, by means of a hydraulically driven scissors linkage system and where the top member is equipped with a front set of castors so that when the driven scissors linkage raises the top member to a level which allows the top pair of castors to contact the Ambulance, or other vehicle's, floor the weight of the whole patient occupied unit can be borne between the castors on the vehicle's floor and the attendant at the other end of the unit so that thereafter the attendant can activate a low voltage linear actuator which retracts the undercarriage into the folded or closed position thus allowing the unit to be fully pushed into the vehicle and then locked in position for travelling.

2. A Semi-Automatic Ambulance Trolley as claimed in Claim 1, wherein a wheeled bottom chassis member is connected to a top member by means of a low voltage linear actuator driven scissors linkage system.

3. A Semi-Automatic Ambulance Trolley as claimed in Claim 1 or Claim 2, wherein the driven scissor linkage means and the retracting undercarriage means are one and the same.

4. A Semi-Automatic Ambulance Trolley as claimed in any preceding claim including safety rails and, with the unit at the desired height, these rails can be lowered to permit patient transfer to an Hospital's equipment.

5. A Semi-Automatic Ambulance Trolley as claimed in any preceding claim which is made from metal, plastics or composite material, or from a combination of these materials but more conveniently aluminium tube.

6. A Semi-Automatic Ambulance Trolley substantially as described herein with reference to the accompanying drawings, Figs 1 to 3.

**Amendments to the claims have been filed as follows**

CLAIMS

1. A Semi-Automatic Ambulance Trolley comprising a wheeled bottom chassis member which is connected to a top member, on which the patient rests, by means of a low voltage linear acutuator driven scissors linkage system and where the top member is equipped with a front set of castors so that when the driven scissors linkage raises the top member to a level which allows the top pair of castors to contact the Ambulance, or other vehicle's, floor the weight of the whole patient occupied unit can be borne between the castors on the vehicle's floor and the attendant at the other end of the unit so that thereafter the attendant can activate a low voltage linear actuator which retracts the undercarriage into the folded or closed position thus allowing the unit to be fully pushed into the vehicle and then locked in position for travelling.

2. A Semi-Automatic Ambulance Trolley as claimed in Claim 1, wherein a wheeled bottom chassis member is connected to a top member by means of a hydraulically driven scissors linkage system.

3. A Semi-Automatic Ambulance Trolley as claimed in Claim 1 or Claim 2, wherein the driven scissor linkage means and the retracting undercarriage means are one and the same.

4. A Semi-Automatic Ambulance Trolley as claimed in any preceding claim including safety rails and, with the unit at the desired height, these rails can be lowered to permit patient transfer to an Hospital's equipment.

5. A Semi-Automatic Ambulance Trolley as claimed in any preceding claim which is made from metal, plastics or composite material, or from a combination of these materials but more conveniently aluminium tube.

6. A Semi-Automatic Ambulance Trolley substantially as described herein with reference to the accompanying drawings, Figs 1 to 3.

The Patent Office

-9-

**Application No:** GB 9513053.0
**Claims searched:** 1 to 6

**Examiner:** John Twin
**Date of search:** 11 June 1996

# Patents Act 1977
# Search Report under Section 17

**Databases searched:**

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UK Cl (Ed.O): B7B (BTL2)

Int Cl (Ed.6): A61G 1/02, 1/06

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**Documents considered to be relevant:**

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| X | US 5365622 | (Schirmer) - see eg col.2, lines 34-45 | 1 at least |
| X | US 5084922 | (Louit) | 1 at least |
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| | | |
|---|---|---|
| (51) International Patent Classification 6 : A61G 1/06, 3/00 | A1 | (11) International Publication Number: WO 98/04228 |
| | | (43) International Publication Date: 5 February 1998 (05.02.98) |

(21) International Application Number: PCT/IE97/00052

(22) International Filing Date: 28 July 1997 (28.07.97)

(30) Priority Data:
S960543 26 July 1996 (26.07.96) IE

(71) Applicant: HUNTLEIGH TECHNOLOGY PLC [GB/GB]; 310-312 Dallow Road, Luton, Bedfordshire LU1 1TD (GB).

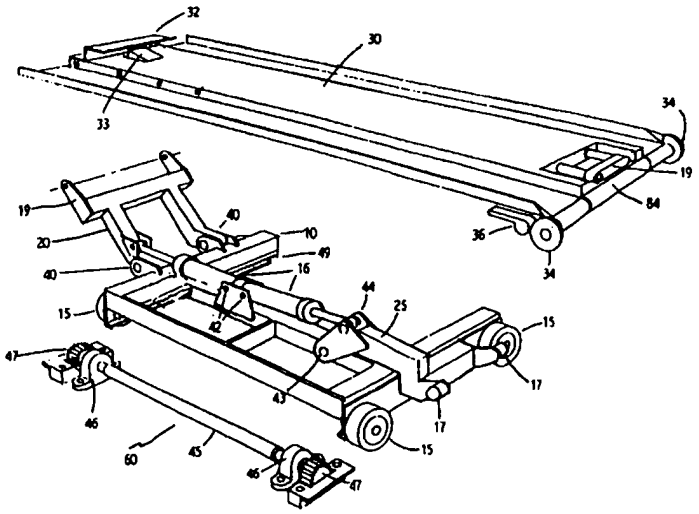
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(74) Agent: MACLACHLAN & DONALDSON; 47 Merrion Square, Dublin 2 (IE).

(81) Designated States: European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

**Published**
*With international search report.*

(54) Title: A STRETCHER LOADING PLATFORM




(57) Abstract

A stretcher loading platform (100) comprises a base frame (10) which is adapted to be secured within an ambulance, and a stretcher tray (30) having a head end and a foot end mounted on the base frame (10). A pair of lift arms is pivotally mounted between the base frame (10) and stretcher tray (30), namely a forward lift arm (20) at the head end of the tray and an aft lift arm (25) at the foot end of the tray (30). The forward lift arm (20) is operable to extend and retract the stretcher tray (30) into and out of the ambulance. The aft lift arm (25) is slidably engaged with the tray (30) and is operable to lift the stretcher tray (30) about a pivot point (40) provided on the forward lift arm (20), so that the stretcher tray (30) can be inclined at a suitable angle for the receipt of a stretcher and for the treatment of a patient. Stretcher latches (33, 19) are provided on the stretcher tray (30) for securing a stretcher when in position. The stretcher tray (30) may be extended out of the ambulance, a stretcher may be loaded and secured thereto, the tray (30) with the stretcher may be retracted into the ambulance, and the angle of the stretcher can be adjusted to suit the patient's condition.

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# A STRETCHER LOADING PLATFORM

The present invention relates to a stretcher loading platform, in particular a stretcher loading platform for mounting within an ambulance. The stretcher loading platform of the present invention has particular, though not exclusive, application for the loading of one person operated stretchers and other stretchers where the controls for the collapsing of the legs are all at one end of the stretcher and therefore can be operated by one person who can collapse the front legs independently of the rear legs by manipulating the appropriate controls on the stretcher.

The use of one person stretchers does raise serious safety considerations because if the front leg is collapsed prematurely then the stretcher will collapse and the patient may be dislodged from the stretcher. Prior art stretcher loading platforms for use in ambulances have never worked sufficiently satisfactorily to enable ambulance authorities to dispense with the use of a second person to assist in the loading of a stretcher.

Accordingly, the present invention seeks to alleviate the disadvantages associated with the prior art stretcher loading platforms to provide a system whereby a stretcher can be loaded safely by one person into an ambulance.

Accordingly, the present invention provides a stretcher loading platform comprising a base frame adapted to be secured within an ambulance, a stretcher tray having a head end and a foot end mounted on the base frame, a pair of lift arms pivotally mounted between the base frame and stretcher tray, namely a forward lift arm at the head end of the tray and an aft lift arm at the foot end of the tray, the forward lift arm being operable to extend and retract the stretcher

tray into and out of the ambulance, with the aft lift arm being slidably engaged with the tray and being operable to lift the stretcher tray about a pivot point provided on the forward lift arm, so that the stretcher tray can be inclined at a suitable angle for the receipt of a stretcher and for the treatment of a patient, with securing means being provided on the stretcher tray for securing a stretcher when in position, whereby the stretcher tray may be extended out of the ambulance, a stretcher may be loaded and secured thereto, the tray with the stretcher may be retracted into the ambulance, and the angle of the stretcher adjusted to suit the patient's condition.

Securing means is provided at the head end of the stretcher tray, so as to retain the stretcher on the stretcher tray and the aft lifting arm is operable to lift the stretcher tray with attached stretcher to the desired level which can be a generally horizontal position or an upwardly or downwardly inclined position if the medical condition requires it.

Advantageously, the lift arms are operable by electrically powered actuators mounted on the platform, with at least one actuator being provided to operate each arm.

Advantageously, the base is movable laterally within an ambulance between a travelling mode at one side of the ambulance and a loading mode towards the centre of the ambulance, the base including wheels movable along the ambulance floor, means for maintaining the base in correct alignment during lateral movement and means for locking the base in position at a desired location in the ambulance within the limits of the lateral movement.

The invention will hereinafter be more particularly described with reference to the accompanying drawings

which show, by way of example only, one embodiment of a stretcher loading platform according to the invention.

In the drawings:

Figures 1a to 1e inclusive are perspective views showing the sequence of steps in loading a stretcher carrying a patient, into an ambulance using the stretcher loading platform of the present invention;

Figure 2 is an exploded perspective view of the loading platform showing the tray and the operating mechanism;

Figure 3 is a side view of the platform showing the stretcher tray in the extended and downwardly tilted portion (X), the horizontal portion (Y), and the raised portion (Z);

Figure 3a is an enlarged view of a detail of Figure 3;

Figure 4 is a plan view of the operating mechanism with the tray removed;

Figure 5a is a head end view of the chassis base, Figure 5b a side view, Figure 5c an enlarged view through the head end elevation and Figure 5d a cross sectional view through the latch assembly; and

Figure 6a is a side view of the tray, Figure 6b is a plan view of the tray and Figure 6c is a cross sectional view along C-C of Figure 6b.

Referring to the drawings, the stretcher loading platform of the present invention is indicated generally by the reference numeral 100 and includes a chassis 10 which is

secured to the floor of an ambulance. The stretcher loading platform 100 also includes a stretcher tray 30 on which are provided tracks for receipt of the guide wheels 50 on a stretcher. The stretcher tray 30 is mounted on the chassis 10 which is movable laterally across the ambulance and also the tray 30 is movable longitudinally towards the entrance to the ambulance.

The stretcher loading platform 100 has a forward lifting arm 20 and an aft lifting arm 25 which are each operated by a respective electrical actuator 16. When arm 20 is activated it tilts and extends the stretcher tray 30 out of the ambulance thereby enabling the stretcher tray 30 to be inclined at a suitable angle so that a stretcher can be conveniently pushed onto the inclined stretcher tray 30. The platform 100 also includes a stretcher latch 19 provided on the stretcher tray 30 for securing a stretcher at its foot end. The stretcher latch 19 can be a sprung bar which is rotated by a user and released. The head of the stretcher is secured by a receiver 32, 33.

The stretcher loading platform 100 further includes a lateral latch assembly 60 which is activated in order to move the chassis 10 and stretcher tray 30 laterally on a rack and pinion arrangement 47, 49 across to the one side of the ambulance so as to allow a second stretcher to be accommodated within the ambulance. When the chassis 10 and stretcher tray 30 has been moved laterally, the chassis 10 is secured in its final position by means of the latch assembly 60.

A stretcher safety latch release mechanism 70 is also included in the platform 100, which provides means for releasing the stretcher from the stretcher tray 30 when it is desired to unload the stretcher from the tray.

Referring to Figures 1a to 1e, the sequence of steps involved in loading a stretcher into an ambulance, using the stretcher loading platform 100 will now be described to assist in understanding the features of the invention.

Figure 1a

The stretcher loading platform 100 is placed in the loading position i.e. with the stretcher tray 30 extended out of the rear of the ambulance over the ambulance step and approximately centred in the loading area. Guide wheels 50 on the stretcher are located in the tracks 31 provided on the stretcher tray 30 and the guide wheels 50 are centred by lead-in rollers 34 of stretcher tray 30. The stretcher legs 51 are forced to fold into a closed position when they are released by the operator and abut against the edge of the stretcher tray 30 or ambulance step.

Figure 1b

The receiver 32 on the stretcher tray 30 is engaged by the stretcher so that it is secured onto the stretcher tray 30 when the latter is fully rolled thereon, thereby leaving the operator's hands free to secure the foot end of the stretcher with a second latch or sprung bar 19. The forward lift arm 20 is activated so as to retract fully the stretcher tray 30 into the vehicle.

Figure 1c

If desired, the stretcher loading platform 100 can be moved laterally and located against the side wall of the ambulance. This lateral movement allows for use of two stretchers in the ambulance. If improved access to the

patient is required from the far side (as shown in drawings), the stretcher loading platform 100 need not be moved laterally. At this stage the ambulance doors can be closed and the ambulance is ready to move off.

Figure 1d

The stretcher tray 30 can be raised about the pivot of the platform to a level position for normal transit. This can be achieved by using the aft lift arm 25.

Figure 1e

As shown in Figure 1e, the stretcher tray can be lifted further by the aft lift arm 25 and be angled as required to provide head-down drainage, which is necessary in a number of emergency cases. Positioning can be infinitely variable.

The unloading sequence is the reverse of the loading sequence described above.

With specific reference to Figures 2 and 3 the platform 100 comprises essentially a stretcher tray 30 mounted on a base frame or chassis 10. Included on the chassis 10 are the forward lift arm 20 and the aft lift arm 25. The forward lift arm 20 is pivotally connected to the chassis 10 by pivot pins 40 and has a pair of brackets 19 which are connected to the platform 30 by a pivot pin 21. The aft lift arm 25 has a two outer rollers 17 for sliding contact with the tray 30.

The arms 20 and 25 are each operated by electrical actuators 16 which are pivotally mounted on the chassis 10 by cylinder pivot pins 42. The aft lift arm 25 is pivotally connected to

the chassis 10 by an aft lift pivot pin 43 and the aft actuator 16 is connected to the aft lift arm 25 by a piston rod pin 44.

The chassis 10 is mounted on four wheels 15 for movement across the floor of the ambulance. The extent of the movement of the chassis is limited by a control mechanism which comprises a pair of racks 49 on the underside of the chassis 10. Each rack 49 engages with a pinion wheel 47, both of which are connected by a squaring shaft 45 which is rotatably mounted in two plummer bearings 46 which are fixed to the floor of the ambulance by hold down blocks 48.

The lateral latch assembly 60 for the lateral movement of the chassis 10 along the floor of the ambulance is shown in Figures 5a and 5d and includes an actuating bar 71, a swinging arm 72, a latch pin 73, a hold down block 74, a spacer bar 75, an actuating bar return spring 76, a latch receiver rail 77, a latch release pedal 78 which has a cover 79, a spacer/pivot bushing 80, an actuating bar stop 81 and a spring 82 which spring loads the latch pin 73 to engage with the latch receiver rail 77.

Finally, the full details of the stretcher tray 30 are shown in Figure 2 and 6a and 6c of the drawings. The basic elements of the stretcher tray 30 are the tracks 31, the receiver bracket 32 and stretcher latch 33 at the head end of the stretcher tray 30, and lead in guide wheels 34 at the foot end of the stretcher tray. Adjacent the wheels 34 is the guide/release support bracket 35, latch release levers 36 and latch release cable 37 which passes underneath the tray 30 and above the reinforcing crossrail 38. The two latch release levers 36 are connected by a latch lever pivot bar 39. Other elements of the tray 30 are the reinforcing guide channel 85, latch return spring 81, latch/cable support.

bracket 82, cable support bracket 83 and roller assembly 84 at the foot end of the tray 30 which in conjunction with the guide wheels 34 facilitates transfer of a stretcher onto the stretcher tray.

It will of course be understood that the invention is not limited to the specific details described herein, which are given by way of example only, and that various modifications and alterations are possible within the scope of the invention as defined in the appended claims.

CLAIMS:

1. A stretcher loading platform comprising a base frame (10) adapted to be secured within an ambulance, a stretcher tray (30) having a head end and a foot end mounted on the base frame (10), a pair of lift arms pivotally mounted between the base frame (10) and stretcher tray (30), namely a forward lift arm (20) at the head end of the tray and an aft lift arm (25) at the foot end of the tray (30), the forward lift arm (20) being operable to extend and retract the stretcher tray (30) into and out of the ambulance, with the aft lift arm (25) being slidably engaged with the tray (30) and being operable to lift the stretcher tray (30) about a pivot point (40) provided on the forward lift arm (20), so that the stretcher tray (30) can be inclined at a suitable angle for the receipt of a stretcher and for the treatment of a patient, with securing means (33,19) being provided on the stretcher tray (30) for securing a stretcher when in position, whereby the stretcher tray (30) may be extended out of the ambulance, a stretcher may be loaded and secured thereto, the tray (30) with the stretcher may be retracted into the ambulance, and the angle of the stretcher adjusted to suit the patient's condition.

2. A stretcher loading platform as claimed in claim 1, in which the securing means (33) is provided at the head end of the stretcher tray (30), so as to retain the stretcher on the stretcher tray (30) and the aft lifting arm (25) is operable to lift the stretcher tray with attached stretcher to the desired level which can be a generally horizontal position or an upwardly or downwardly inclined position if the medical condition requires it.

3. A stretcher loading platform as claimed in claim 1 or 2, wherein the lift arms (20,25) are operable by electrically

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EXHIBIT 1004 PAGE0327

powered actuators (16) mounted on the platform, with at least one actuator (16) being provided to operate each arm.

4. A stretcher loading platform as claimed in any of claim 1 to 3, wherein the base (10) is movable laterally within an ambulance between a travelling mode at one side of the ambulance and a loading mode towards the centre of the ambulance, the base (10) including wheels (15) movable along the ambulance floor, means (45,46,47,48,49) for maintaining the base in correct alignment during lateral movement and means (60) for locking the base in position at a desired location in the ambulance within the limits of the lateral movement.

5. A stretcher loading platform according to claim 2, wherein the means for retaining the stretcher in position on the stretcher tray additionally comprises a stretcher latch (19) on the stretcher tray at the foot end of the stretcher tray.

6. A stretcher loading platform according to claim 5, wherein the stretcher latch comprises a spring loaded bar (19) which is rotatable in one direction by a user to release the latch and rotatable in another direction to engage the latch.

7. A stretcher loading platform according to claim 4, wherein the means for maintaining the base in correct alignment during lateral movement includes a lateral latch assembly (60) which is operable to allow movement of the base frame (10) and stretcher tray (30) and includes a rack (49) and pinion (47), the platform being movable so as to allow a second stretcher to be accommodated within the ambulance.

8. A stretcher loading platform according to any one of the

preceding claims, including means for releasing the stretcher from the stretcher tray (30) when it is desired to unload the stretcher from the tray, in which the stretcher securing means comprises a releasable latch (33) and a latch return spring (81) and a remote latch release means which includes a latch release lever (36), and a release cable (37) connected to the latch (33).

9. A stretcher loading platform as claimed in any one of the preceding claims, in which the stretcher tray (30) includes stretcher wheel tracks (31) and a wheel and roller assembly (34,84) at the foot end of the stretcher tray so as to facilitate transfer of a stretcher onto the stretcher tray (30).

10. A stretcher loading platform as claimed in any one of the preceding claims, mounted in an ambulance with electrical power for the operation of the platform being provided from the electrical system of the ambulance.

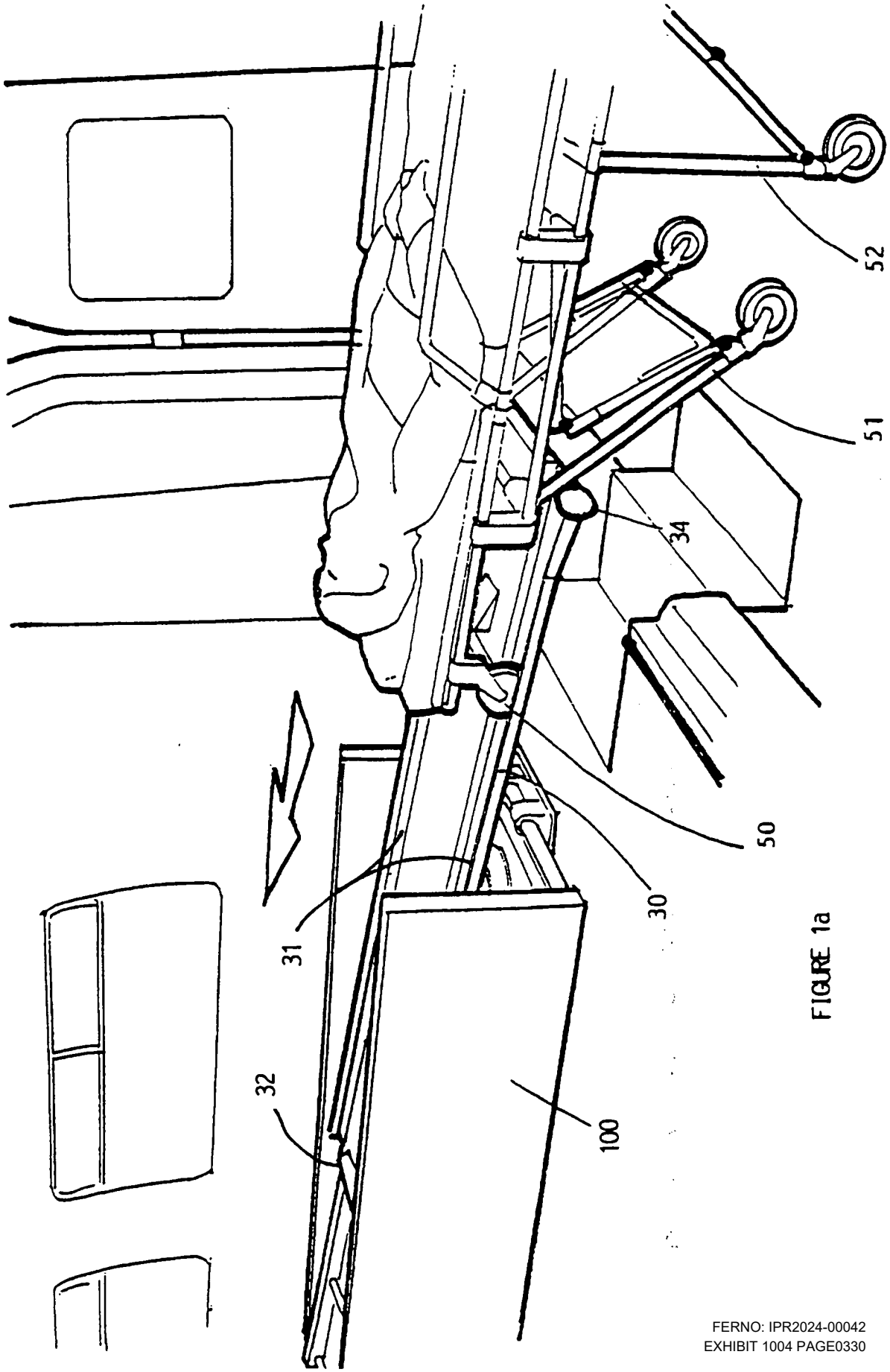



FIGURE 1a

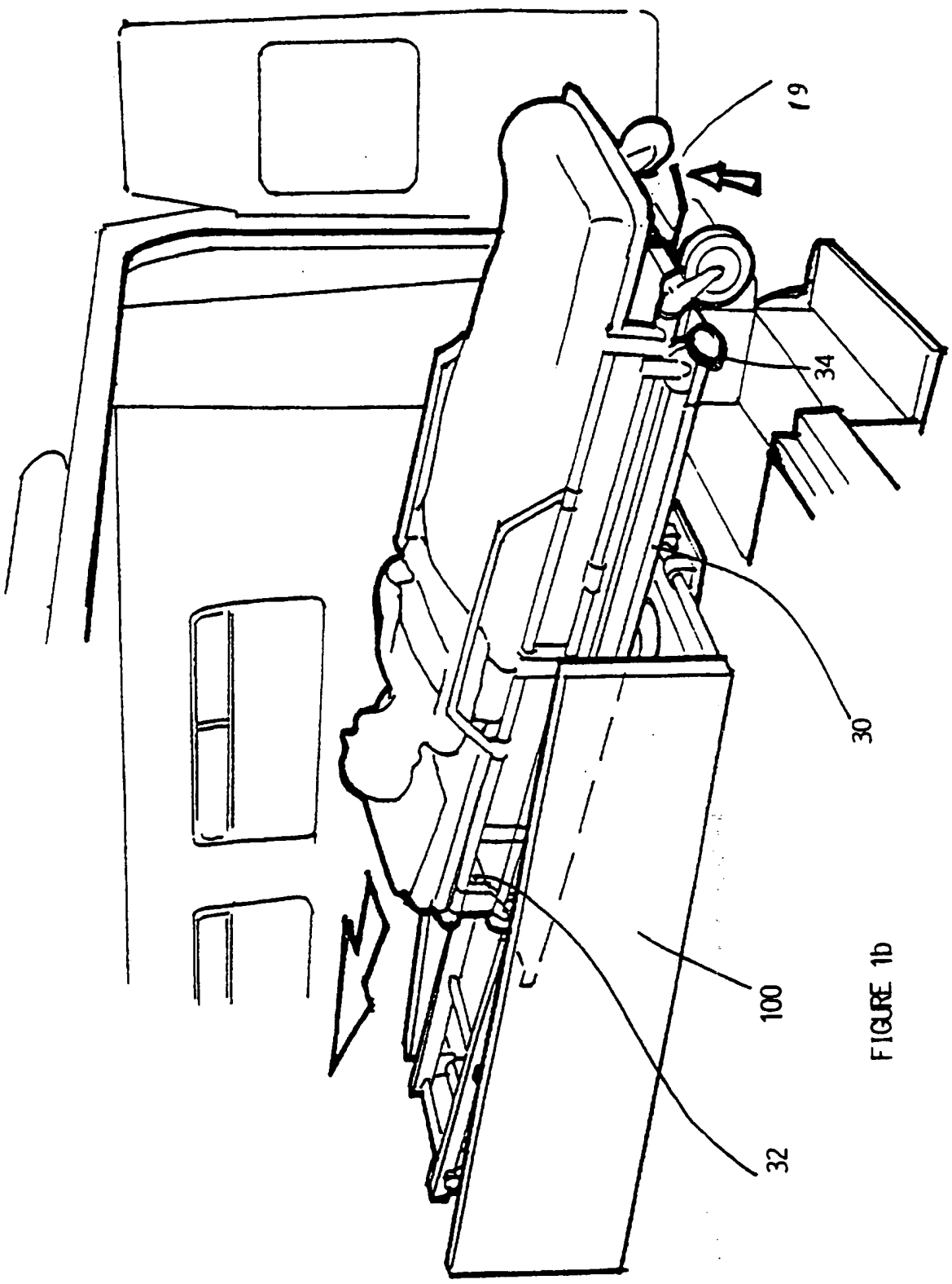



FIGURE 1b

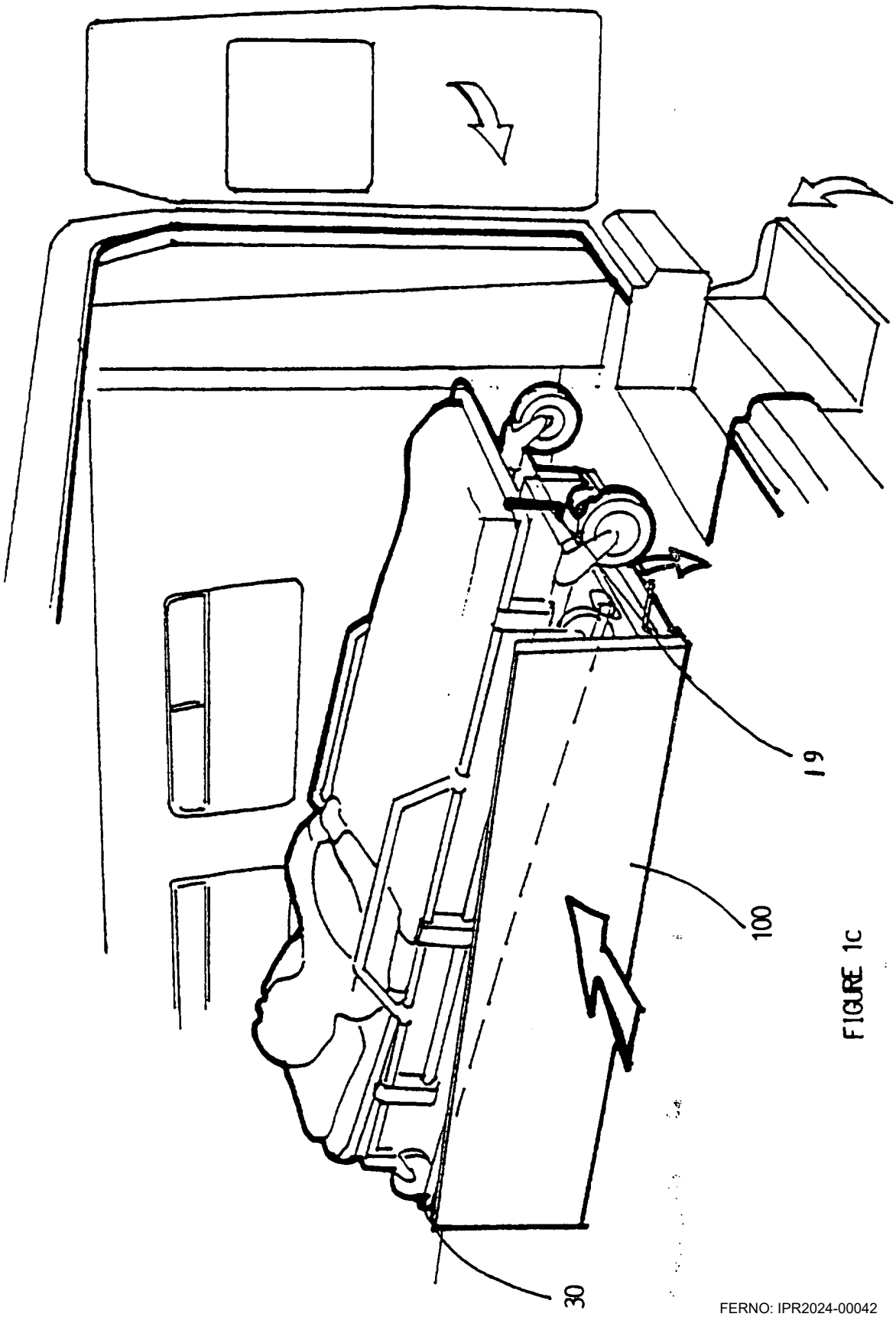



FIGURE 1C

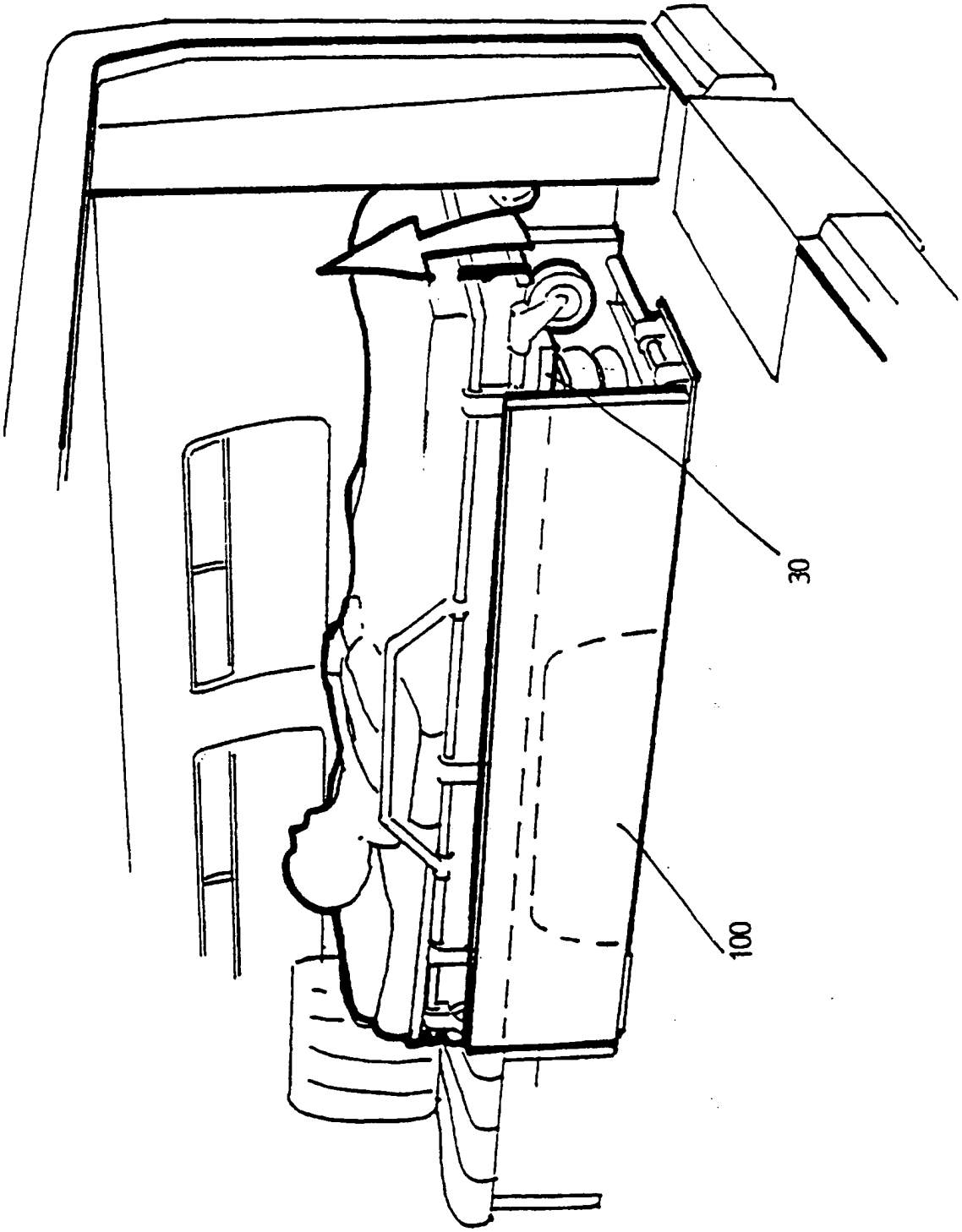



FIGURE 1d

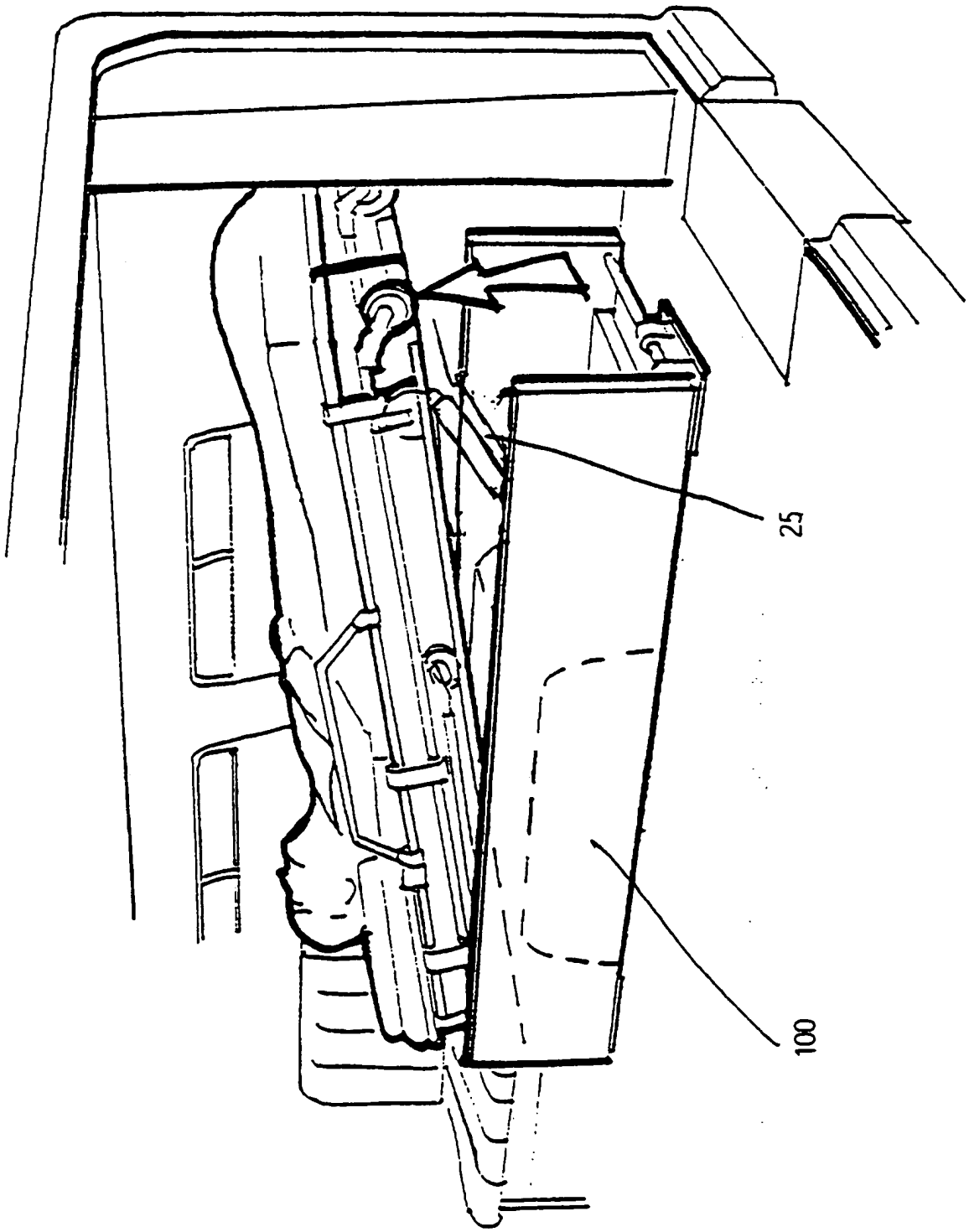



FIGURE 1e

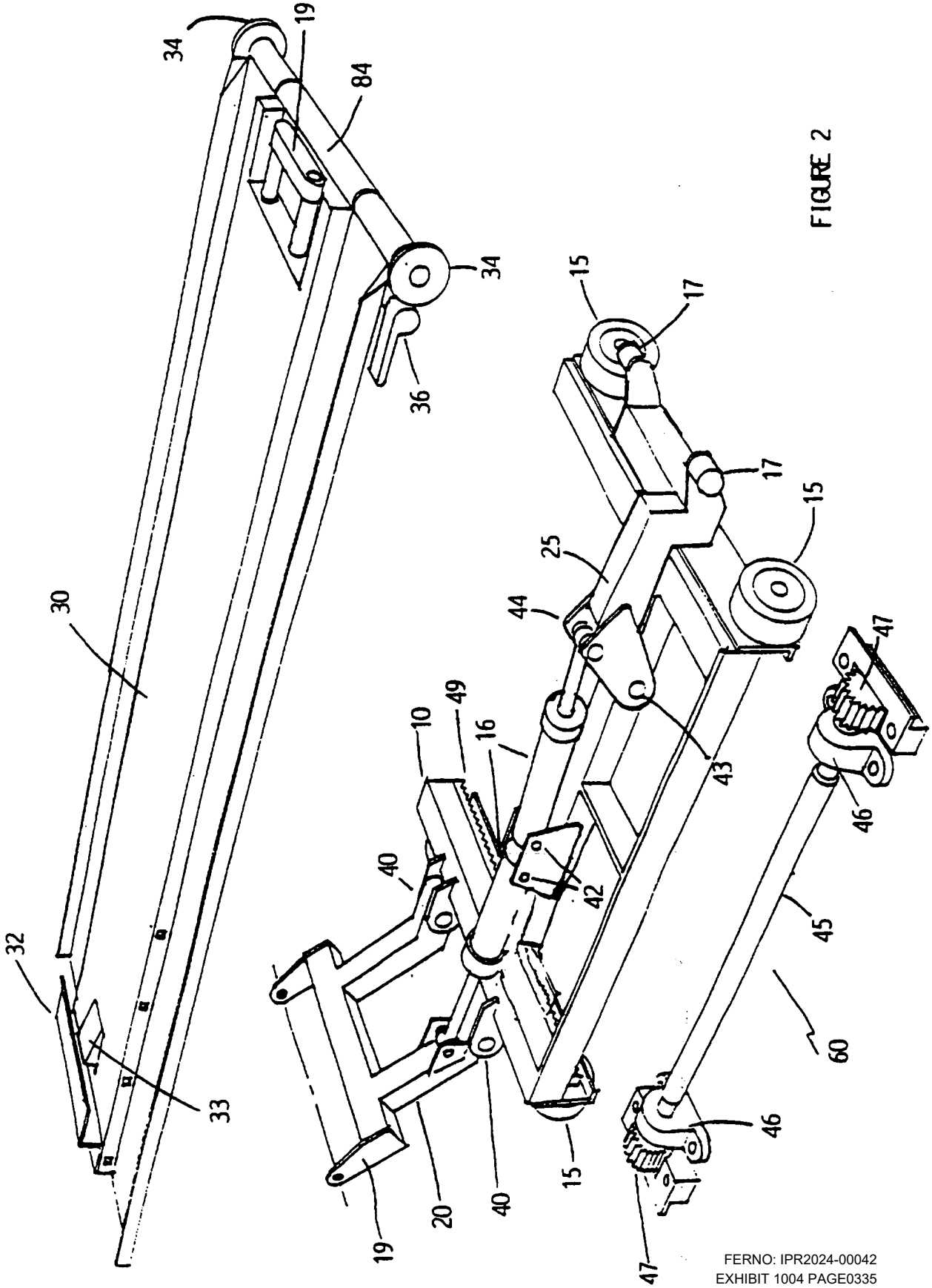

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FIGURE 2

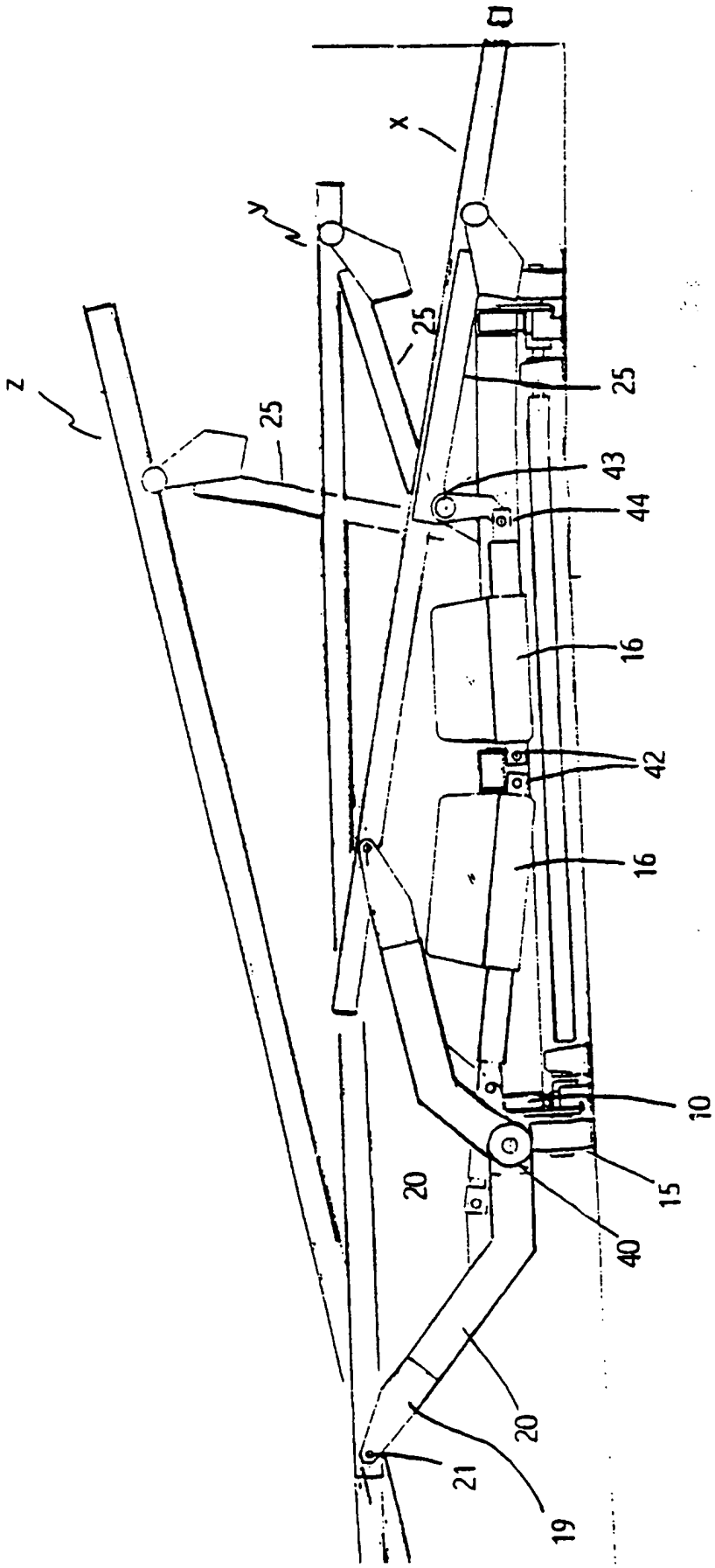



FIGURE 3

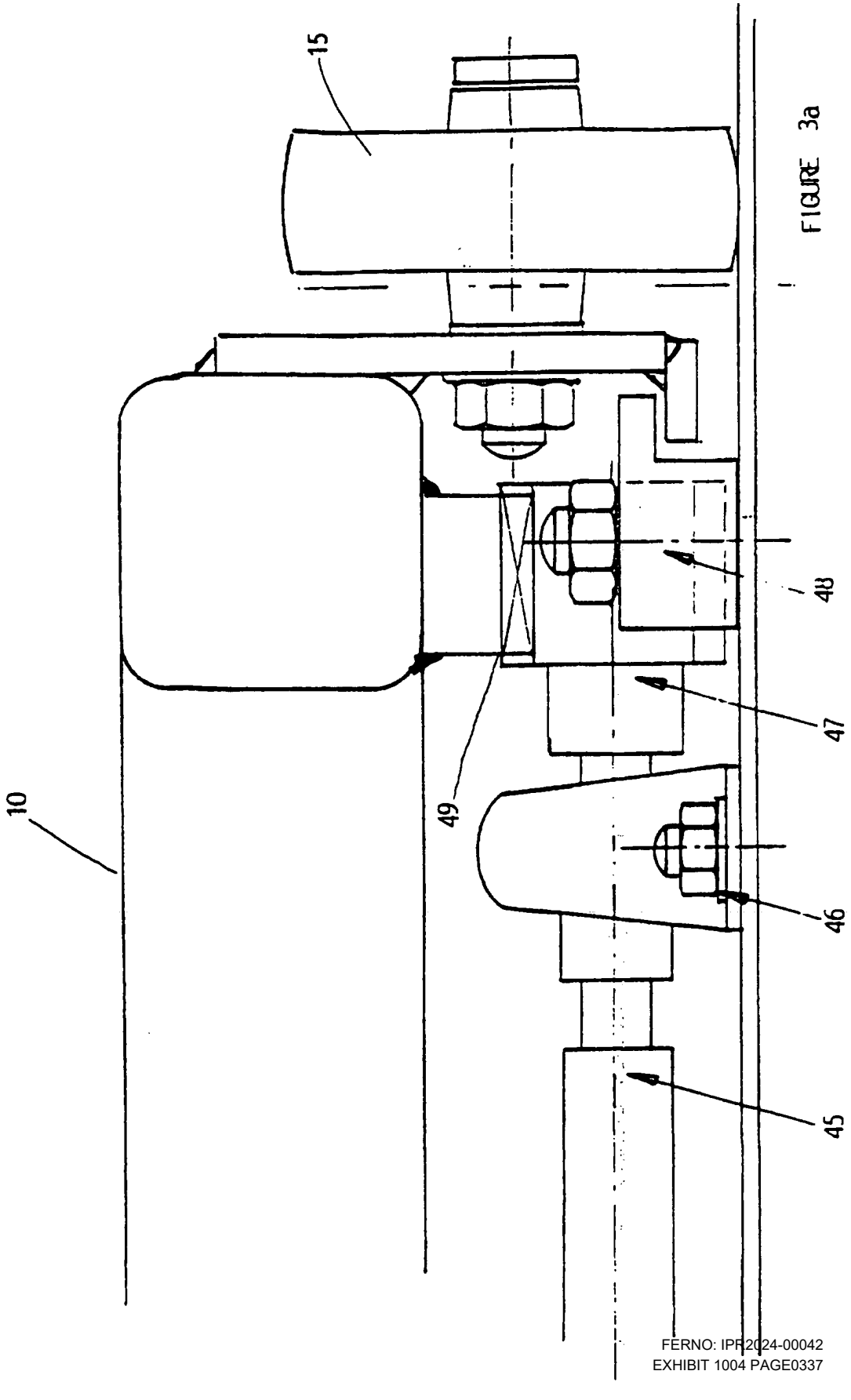



FIGURE 3a

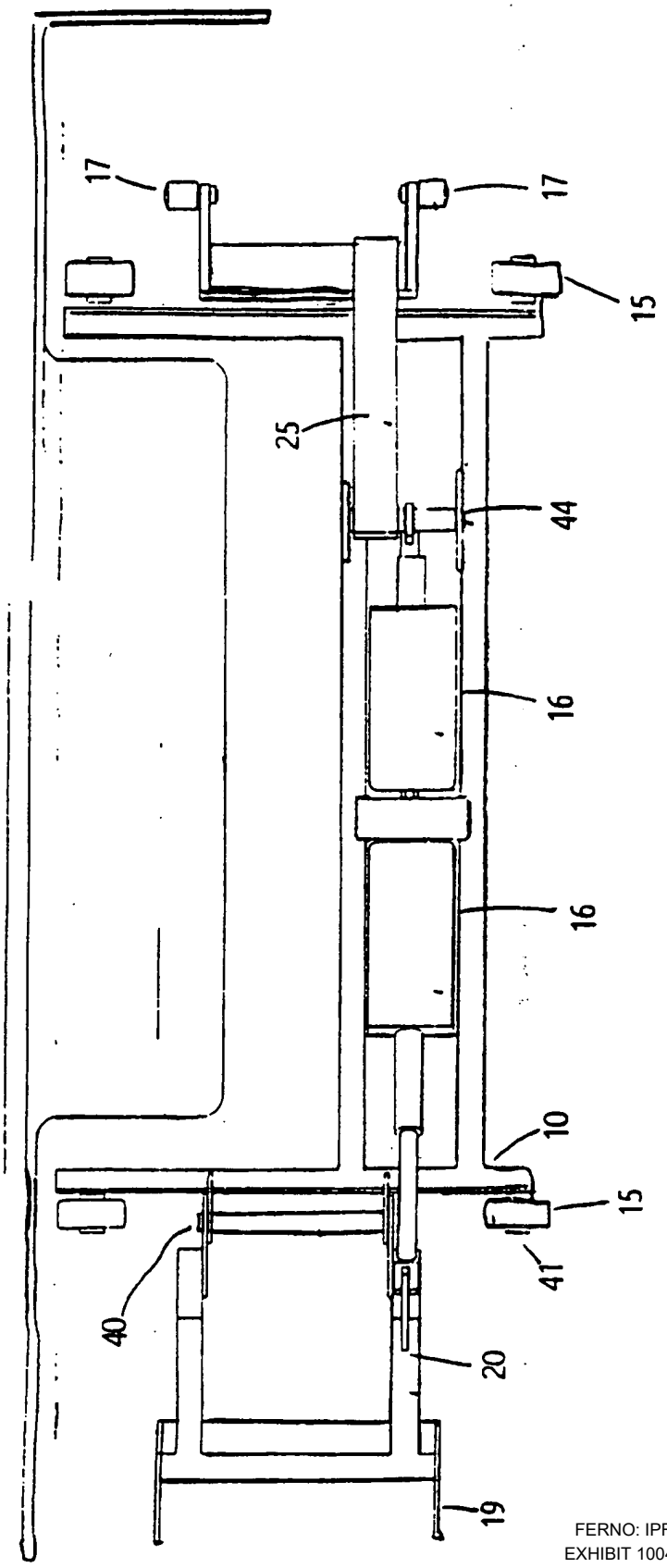



FIGURE 4

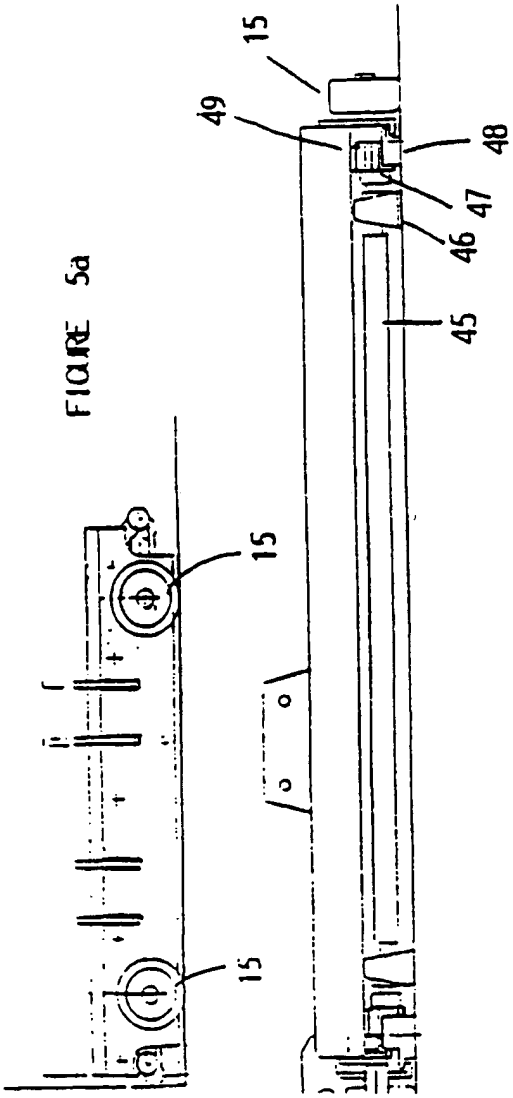



FIGURE 5a




FIGURE 5b

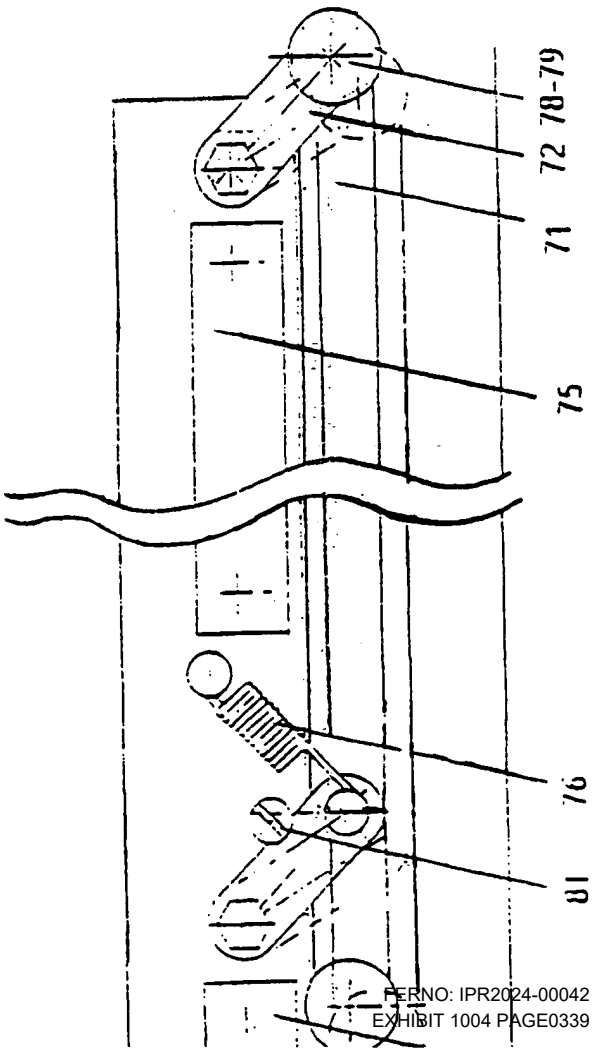



FIGURE 5c

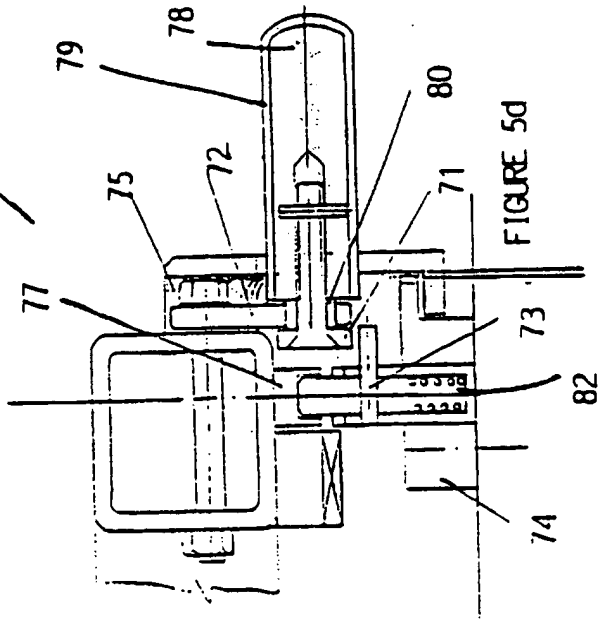



FIGURE 5d

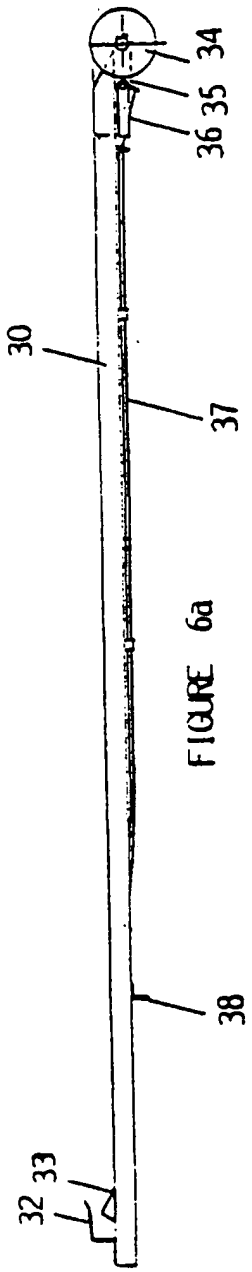



FIGURE 6a

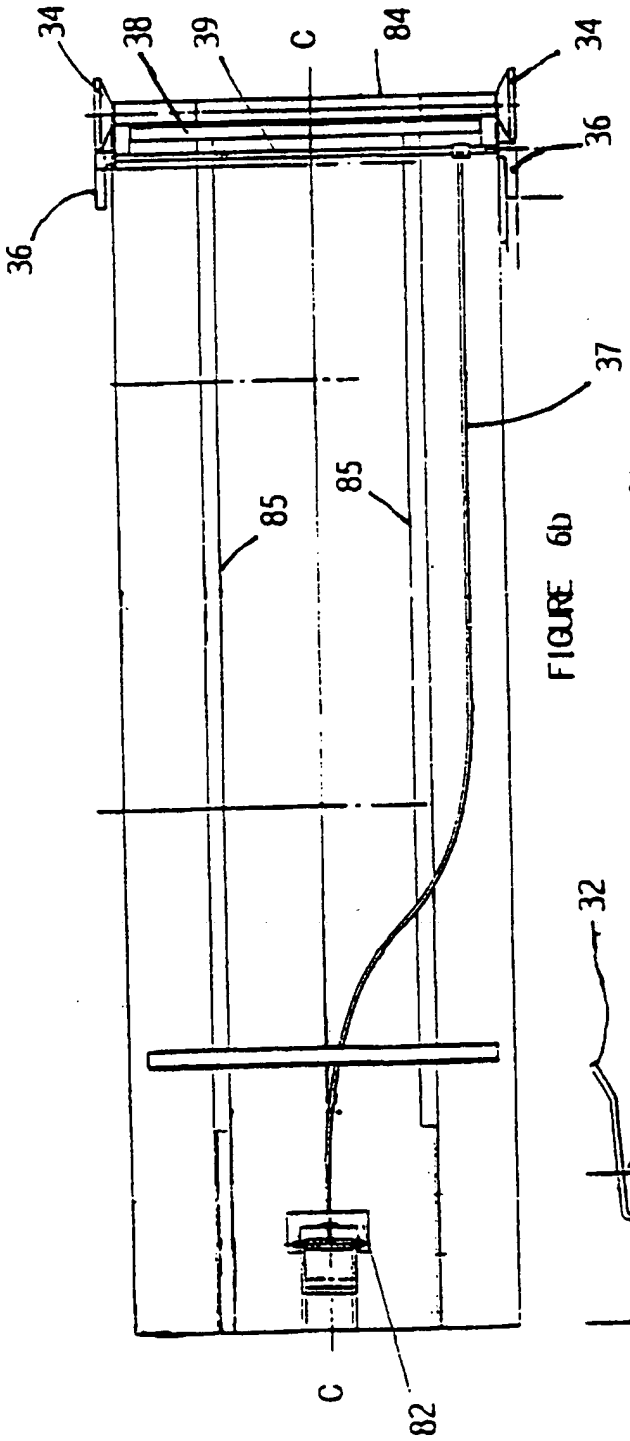



FIGURE 6b

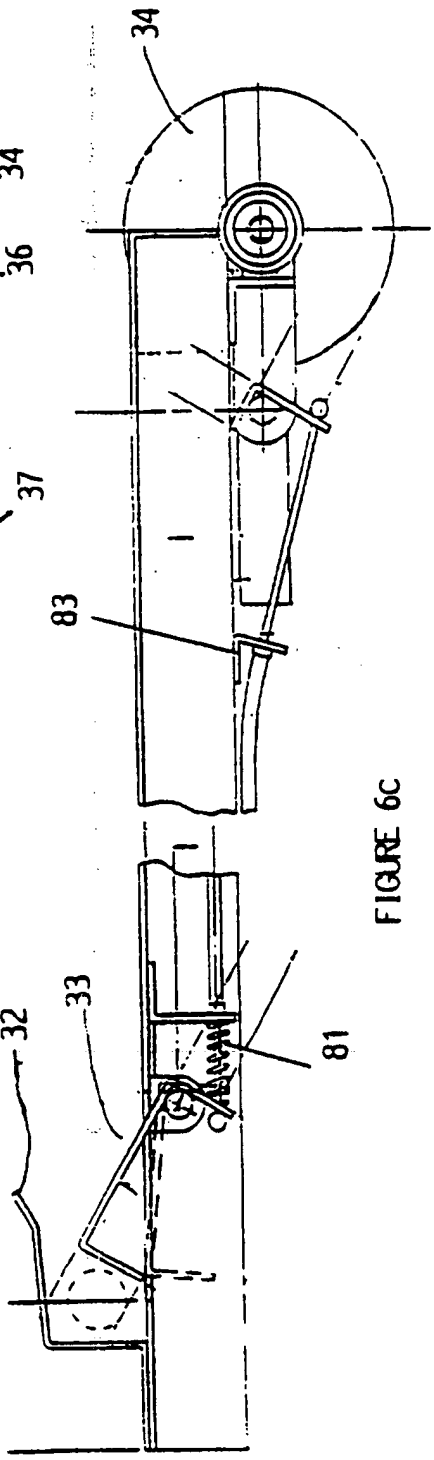



FIGURE 6c

# INTERNATIONAL SEARCH REPORT

International Application No
PCT/IE 97/00052

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61G1/06 A61G3/00

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61G

Documentation searched other than minimumdocumentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | FR 2 651 998 A (FRANCE DESIGN HENRI HEULIEZ S.A.) 22 March 1991 see the whole document | 1 |
| A | DE 12 48 859 B (BINZ & CO.) 31 August 1967 see figure 2 | 1 |
| A | GB 492 547 A (SOUTHERN) 26 May 1938 | |
| A | GB 534 275 A (BONALLACK) 5 February 1940 | |
| A | GB 1 156 258 A (BINZ & CO.) 25 June 1969 | |

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

| Date of the actual completion of theinternational search | Date of mailing of the international search report |
|---|---|
| 10 November 1997 | 21/11/1997 |

| Name and mailing address of the ISA | Authorized officer |
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| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Godot, T |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IE 97/00052

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(12) UK Patent Application (19) GB (11) 2 368 317 (13) A

(43) Date of A Publication 01.05.2002

(21) Application No 0026270.9

(22) Date of Filing 27.10.2000

(51) INT CL[7]
A61G 13/00 // A61G 13/04

(52) UK CL (Edition T)
B7B B396

(56) Documents Cited
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US 4052097 A

(58) Field of Search
UK CL (Edition T) B7B BTF2 BTL2 BTX1
INT CL[7] A61G 1/013 13/00 13/04
WPI, EPODOC, JAPIO

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(74) Agent and/or Address for Service
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Park View House, 58 The Ropewalk, NOTTINGHAM,
NG1 5DD, United Kingdom

(54) Abstract Title
**Trolley with means to tilt a supported tray**

(57) A trolley having a base 12 with wheels 18 and a body tray support 30 supports a body tray 50. The tray support 30 is connected to the base 12 by elevation means (60 fig 1), this is a scissor jack comprising a pair of leavers 61, 62 fixed at their base end (68) and slidably connected at their support end (69). A hydraulic piston 70 raises and lowers the elevation means. Tilting means 190 are provided which in combination with the operation of the elevation means (60) enable the tray 50 to be moved to a tilted position. A handle 21 with a stop 192 engages a handle (51) which prevents longitudinal movement, on lowering of the tray support 30 the tray 50 tilts; its upper end supported by the handle 21 and its lower end bing supported by the end tube 37 of the tray support 30. The tilting action means the production if fluids during an autopsy or embalming may be conveniently drained away.

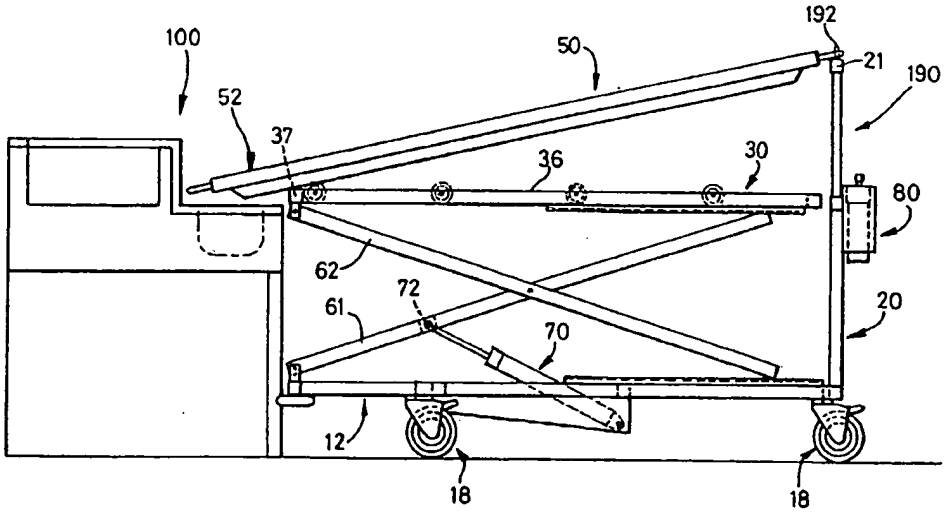



*Fig.2*

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

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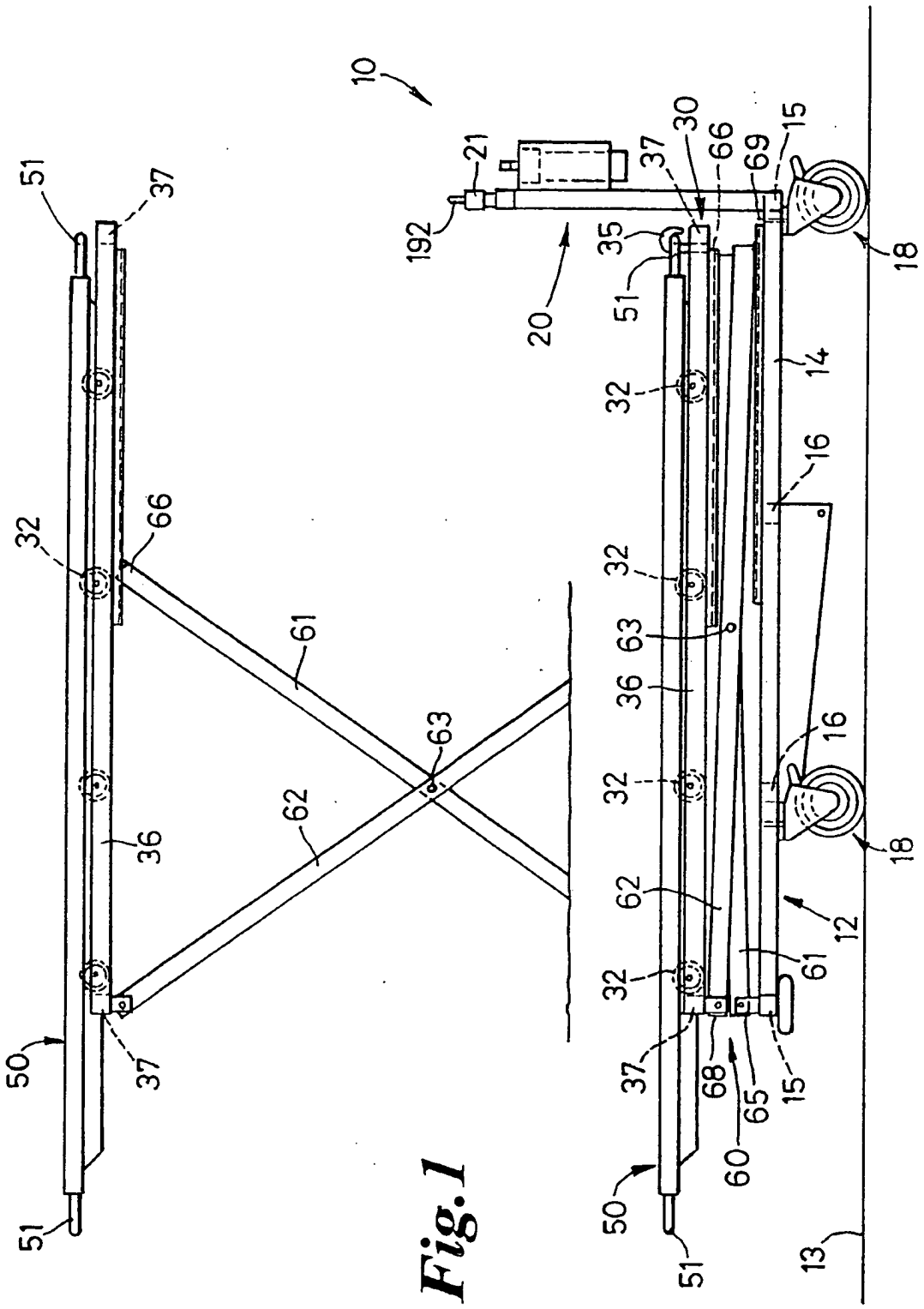

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Fig. 1

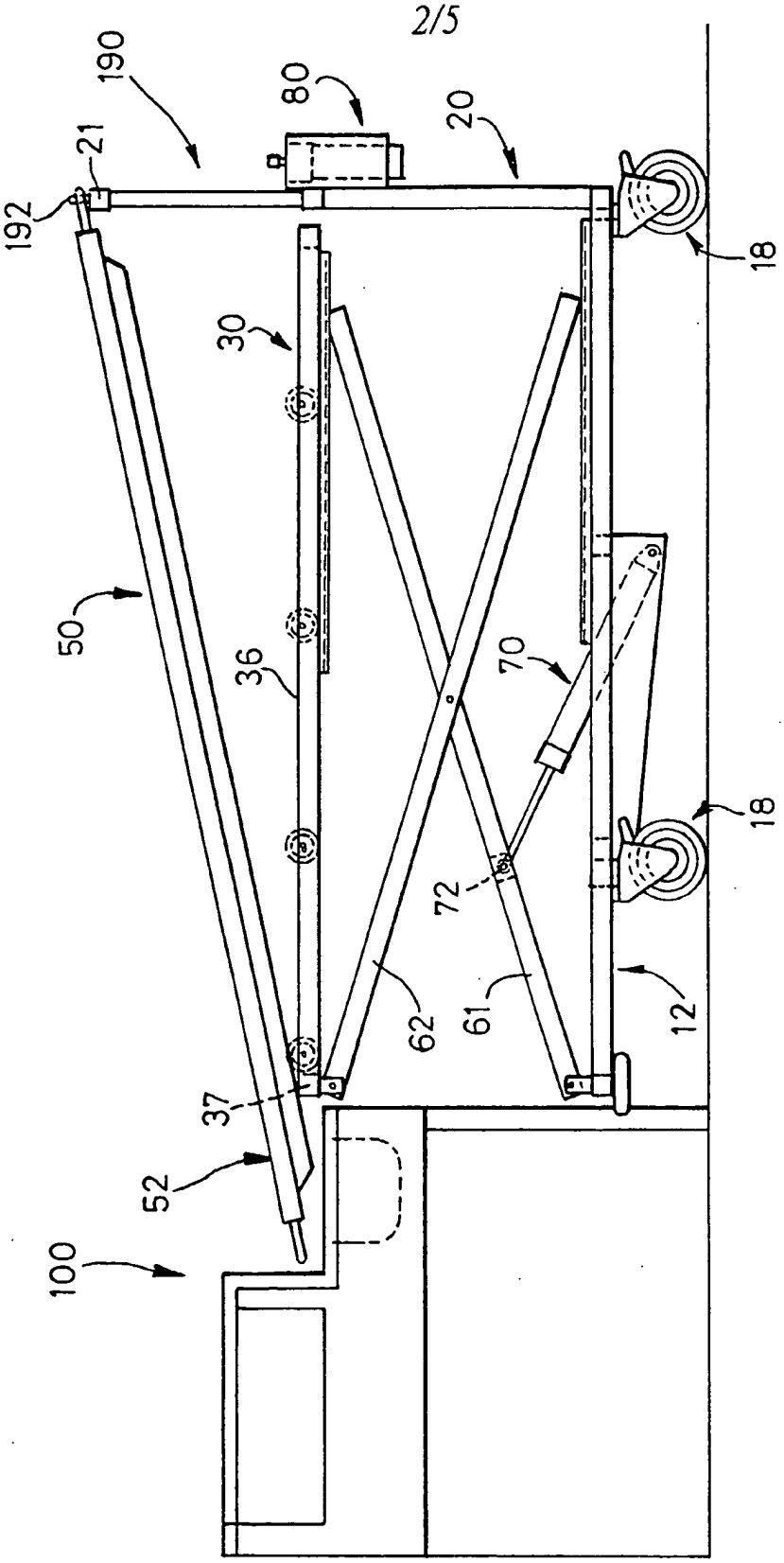



*Fig.2*

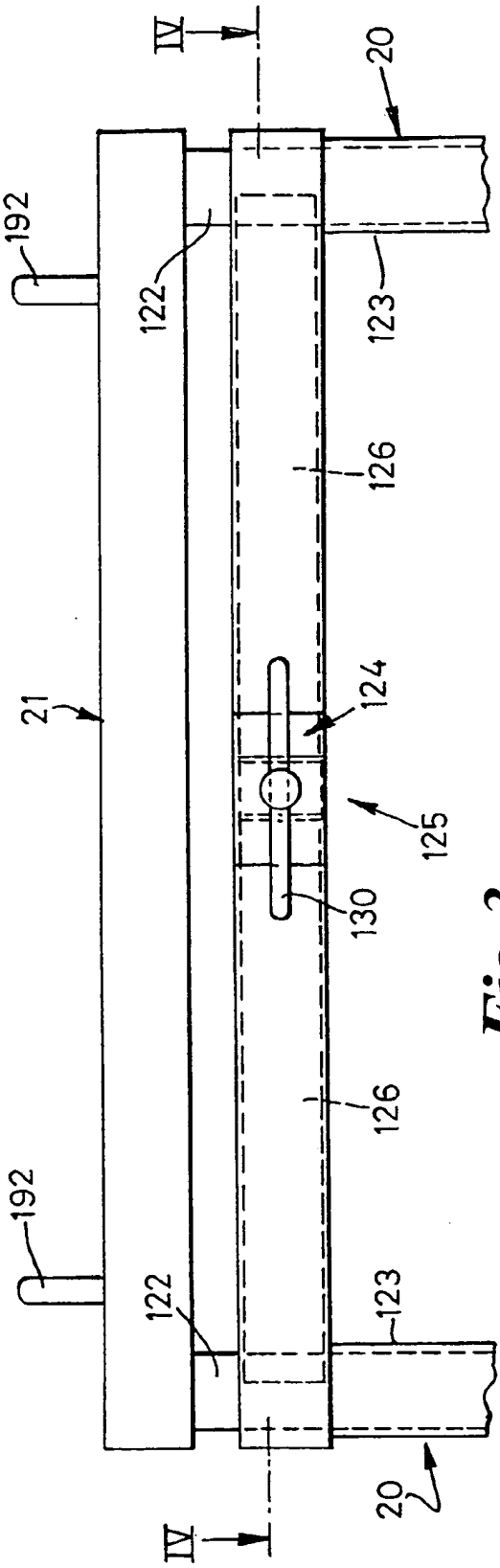

IV
20
192
122
123
126
124
21
125
130
126
192
122
123
20
IV

Fig.3

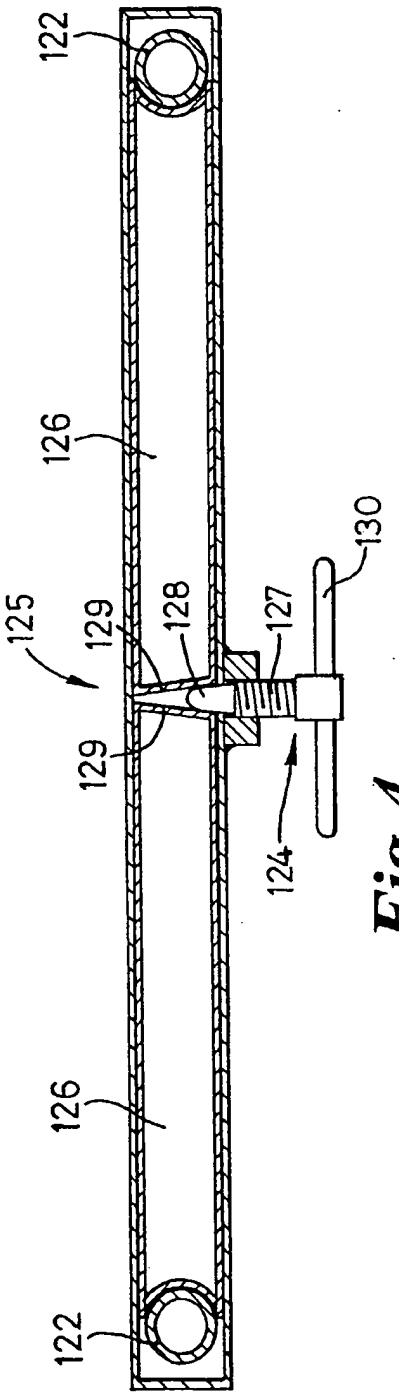

122
126
130
125
129
128
127
129
124
126
122

Fig.4

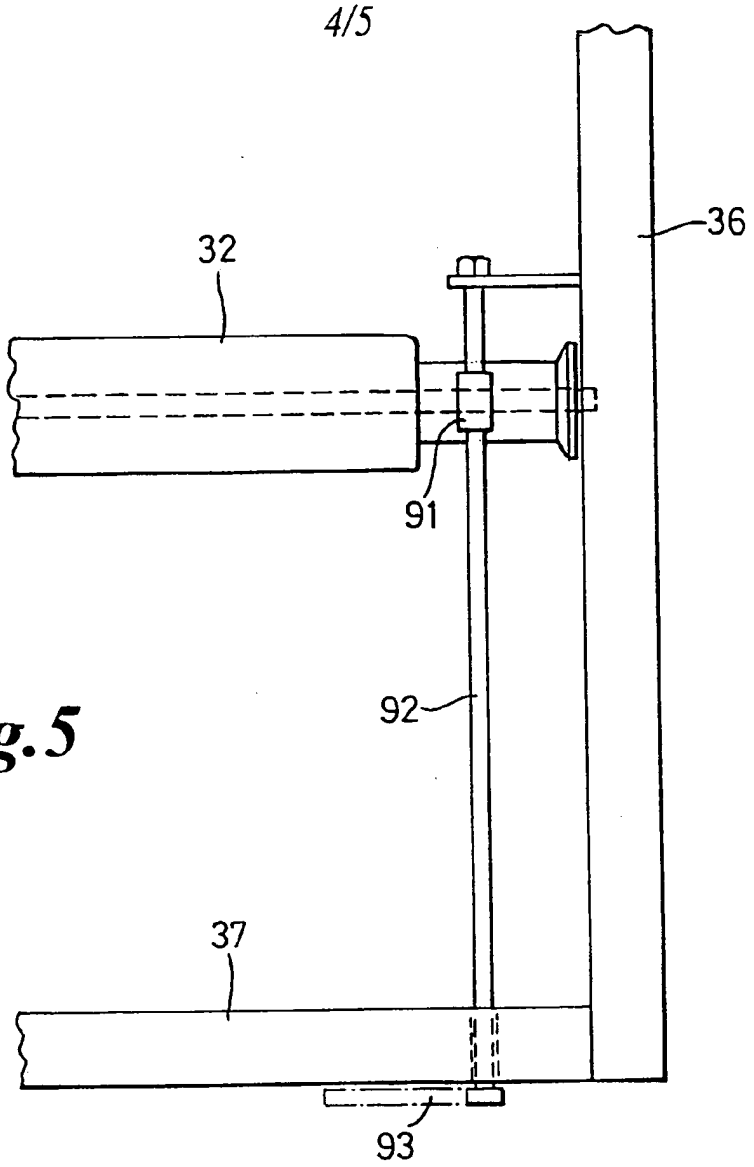



*Fig.5*

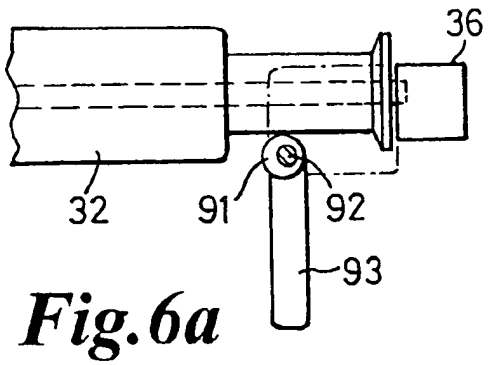



*Fig.6a*

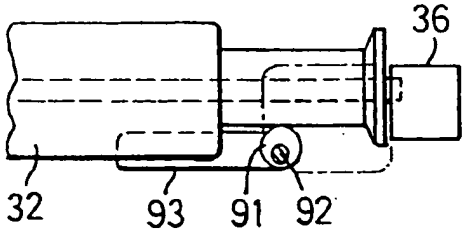



*Fig.6b*

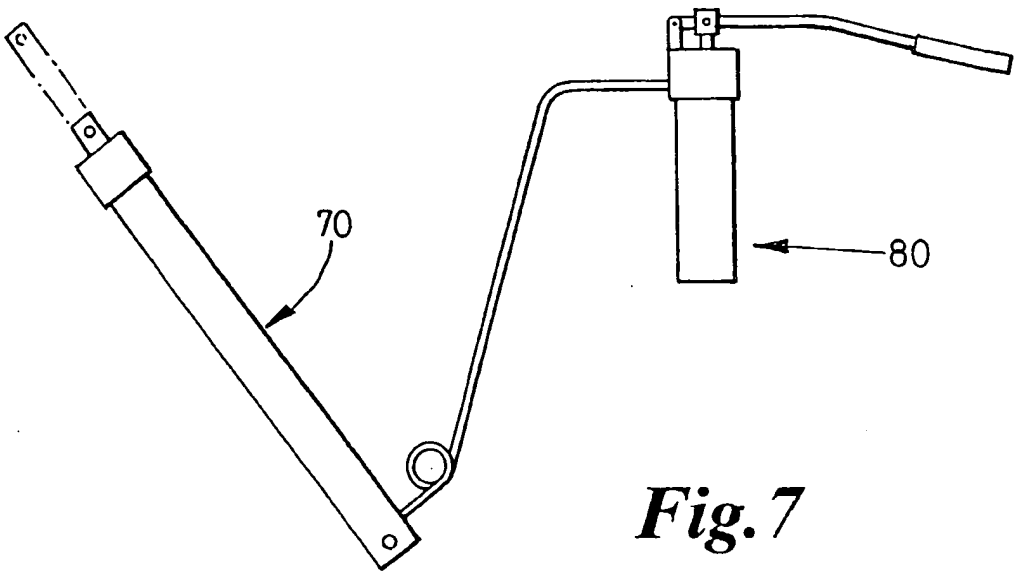



*Fig. 7*

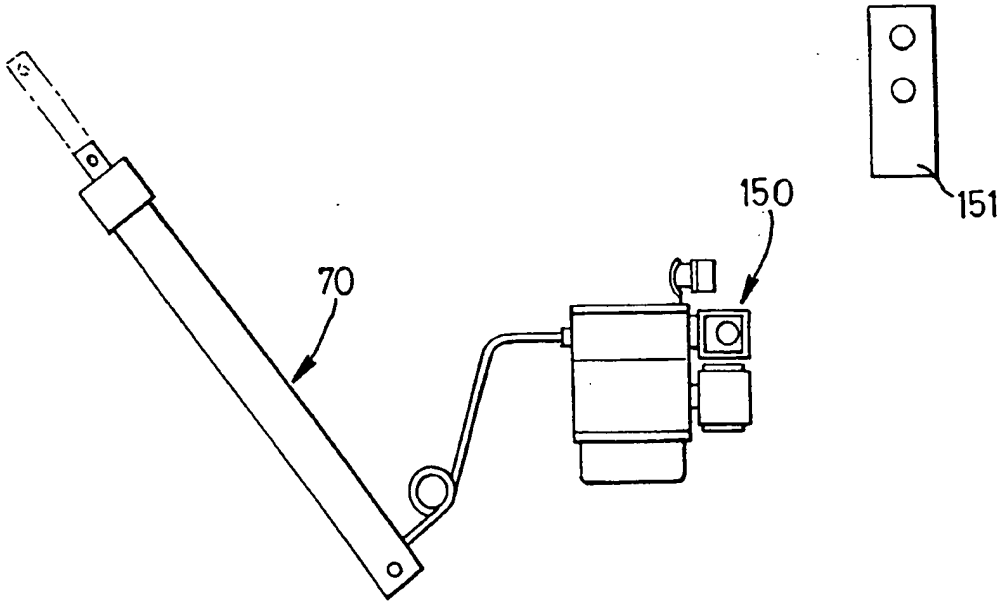



*Fig. 8*

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# A TROLLEY

The present invention relates to a trolley for transporting body trays.

Bodies prior to disposal by burial or incineration may undergo an autopsy at a mortuary or embalming at a funeral parlour.

In both cases, it is usually necessary for an operative to transport the body from a storage location, such as a refrigerator, to an operative location where the autopsy or embalming may take place.

Bodies are normally stored on elongate trays which define shallow tanks or sinks having a drainage opening at one end.

When conducting an autopsy or embalmment it is known to transfer the tray from a trolley onto a static support which defines an inclined support bed for the tray such that the tray is inclined downwardly towards its drainage end so as to facilitate drainage of body fluids from the tray during the autopsy or embalming operation.

A general aim of the present invention is to provide a trolley for body trays which is capable of transporting body trays in a generally horizontal orientation and which is also capable of inclining a body tray to facilitate drainage.

According to one aspect of the present invention there is provided a trolley having a base having ground engagement means for enabling the base to be moved across a floor, a body tray support adapted to support a body tray generally horizontally, elevation means operatively connected between the base and body tray support for raising and lowering the body tray support between a lowermost position and a highermost position, and tilting means

mounted on the base for selective engagement with one end of a tray received on the tray support to arrest lowering movement of said one end of the tray when the tray support is lowered by the elevation means towards its lowermost position from a position above said tilting means to thereby cause the body tray to tilt.

Preferably the tray support is in the form of a horizontal conveyor, preferably a conveyor defined by a series of rollers, to thereby enable a body tray to be slidably moved longitudinally onto the trolley to a transport position.

Preferably stop means are provided which are engageable with the tray to maintain the tray at said transport position.

Preferably the tilting means is defined by an abutment which is engageable with said one end of the trolley. Preferably said abutment is located beyond said transport position (in the longitudinal direction of the tray) so as to be remote from said one end of the tray as it is raised and lowered by the elevation means.

Preferably the tray support is adapted to permit the tray to be moved beyond said transport position and that said one end is able to engage said abutment.

Preferably the abutment is height adjustable relative to said base so as to enable the overall height of the tray and its inclination to the base to be adjusted as desired.

According to another aspect of the present invention there is provided a method of tilting a body tray on a trolley as defined above, the method including raising the tray support to a height above said tilting means,

moving the tray and/or tilting means so as to cause engagement of one end of the tray with the tilting means on lowering of the tray support towards its lowermost position, and continuing to lower the tray support to a desired height in order to cause the body tray to tilt by a desired amount.

Various aspects of the present invention are hereinafter described with reference to the accompanying drawings, in which:-

Figure 1 is a side view of a trolley according to an embodiment of the present invention showing the tray support at its lowermost and highermost positions;

Figure 2 is a side view of the trolley of Figure 1 with a body tray shown at a tilted position.

Figure 3 is an end view of part of the trolley shown in Figure 1.

Figure 4 is a sectional view taken along line IV – IV in Figure 3.

Figure 5 is a plan view of part of the trolley shown in Figure 3.

Figures 6a and b are part sectional views taken along line VI – VI in Figure 5 showing a roller braking mechanism in different modes of operation.

Figure 7 is a schematic diagram showing a manually operated hydraulic pump for actuating the elevation means.

Figure 8 is a schematic diagram showing an electrically operated hydraulic pump for actuating the elevation means.

Referring to the drawings, there is shown a trolley 10 having a base 12 which is preferably defined by a framework of metal tubes. The tube may be of steel or aluminium.

Preferably the framework, in plan, is rectangular and is made up of two side tubes 14 (only one of which is visible), two end tubes 15 and two cross-tubes 16.

The base 12 is adapted for movement over the floor 13 by the provision of four jockey wheels 18; preferably each of which is mounted for 360° rotation about a vertical axis 19.

Preferably each wheel 18 is provided with a brake so as to enable the trolley to be securely retained at a desired position on the floor 13.

It will be appreciated that jockey wheels 18 are one example of ground engaging means which enable the trolley to be conveyed across a floor. Other types of ground engaging means, such as ball castors or rollers may be used.

At one end of the base 12, an upstanding framework 20 is attached which serves as a support frame for a handle 21 for an operative to grip for moving and steering the trolley.

The trolley 10 includes a body tray support 30 which is preferably in the form of a rectangular frame which supports a plurality of rollers 32.

The frame is preferably formed by two side tubes 36 and two end tubes 37. The tubes are preferably formed of steel or aluminium.

The rollers 32 enable an elongate body tray 50 to be slid in its longitudinal direction onto and off the tray support by an operative pulling or pushing the tray 50 using handle 51 located at both ends of the tray 50.

Preferably the body tray support 30 horizontally supports the tray 50; this facilitates the loading and unloading of a tray onto/from the trolley and also does not encourage movement of the tray in one or other of its longitudinal directions once loaded onto the trolley.

A stop 35 is preferably provided which is engageable with a handle 51 at one end of the trap 50 so as to retain the tray 50 against longitudinal movement. Preferably the stop 35 is in the form of a removable hook member which overlaps handle 51.

As illustrated in Figures 5, 6a and 6b, at least one of the rollers 32 may be provided with a brake 90 which acts to permit free rotation of the roller 32 or to prevent static of the roller 32.

Accordingly an operative may actuate of the brake 90 to prevent rotation of the roller 32 and thereby prevent horizontal movement of a body tray 50 supported thereon. The brake 90 may be provided either as an alternative to stop 25 or in addition to stop 35.

Preferably the brake 90 comprises an eccentric 91 fixedly mounted on a shaft 92. The shaft 92 is rotatably mounted on the frame 30 and is preferably provided with a handle 93 for causing rotation of the shaft 92.

At one rotary position of the shaft 92 (as seen in Figure 6a) the eccentric 91 is spaced from roller 32 and so permits free rotation of the roller 32.

At an other rotary position of the shaft 92, (as seen in Figure 6b) the eccentric 91 abuttingly engages the roller 32 and so prevents rotation of the roller 32.

Conveniently, handle 93 is located on the outer side of the end frame member 37 which is located adjacent to handle 21 to facilitate access thereto for an operative when pushing the trolley using handle 21.

The tray support 30 is operatively connected to the base 12 by an elevation means 60.

Preferably the elevation means 60 is in the form of a scissor jack arrangement comprising on each side of the base 12 a pair of levers 61, 62 which are pivotally connected at a mid-location 63. Lever 61 is pivotally connected at one end 65 to the base 12 and is slidingly connected to the tray support 30 at its other end 66. Lever 62 is pivotally connected to the tray support 30 at its end 68 and is slidingly connected to the base 12 at its other end 69.

A hydraulic piston 70 (Figure 2) is connected between the base 12 and a cross-member 72 extending between the pair of levers 61 for deflecting the levers 61 and thereby causing the tray support 30 to be raised/lowered whilst maintaining the tray support 30 substantially horizontal.

Pressurised hydraulic fluid for raising the tray support 30 may be supplied by a manually operated pump 80 mounted on the framework 20 as illustrated in Figures 1, 2 and 7. Alternatively, as illustrated in Figure 8 an electrically powered pump 150, conveniently mounted beneath the base 12 may be provided.

An electrical power source (not shown) such as a battery may also be conveniently mounted beneath base 12. A switch 151 for operating the pump 150 is conveniently mounted on the framework 20.

Tilting means 190 are provided, which in combination with operation of the elevation means 60 enable the tray 50 to be moved to a tilted position (as seen in Figure 2) and then returned to a horizontal position (as seen in Figure 1).

Preferably the tilting means is defined by handle 21 which is provided with a stop 192 that is engageable with handle 51 at one end of the tray 50 to prevent its longitudinal movement.

Accordingly, if the tray support 30 is raised to a position above the handle 21, it is possible to slide the tray 50 forwardly (after removal of stop 35) so that its end is directly above the handle 21. On lowering of the tray support 30, the stop 192 engages the end of the tray and continued lowering of the tray support 30 causes the tray 50 to tilt; its upper end being supported by the handle and its lower end being supported by the end tube 37 of the tray support 30.

Preferably the height of the handle 21 relative to the base 12 is adjustable so as to enable the degree of tilt or the overall height of the tray for a given degree of tilt to be adjusted.

Preferably as seen in Figures 3, 4 height adjustment of the handle 21 is achieved by telescopically mounting the handle 21 in the framework 20 and providing clamping means for holding the telescopic connection at a desired position.

In this connection, handle 21 is preferably provided with a pair of depending arms 122 each of which is telescopically recovered within upright tubular frame members 123.

A locking mechanism 125 is provided for locking the telescopic position of arms 122 within frame members 123. The locking mechanism 125 preferably comprises a pair of rods 126 slidably received within handle 21 for longitudinal movement.

An actuator 124 is provided for moving the push rods 126 outwardly into locking engagement with respective arms 122. Preferably the actuator 124 comprises a screw threaded shaft 127 having an end formation 128 wedgingly engaged with inclined end faces 129 of push rods 126. A handle 13 is provided on shaft 127 to enable an operative to rotate shaft 127 and cause it to move its end formation 128 further between opposed end faces 125 (to cause push rods to move outwardly to lock arms 122). Release of the arms 122 is achieved by rotating shaft 127 in the opposite direction.

Accordingly in operation, the handle 21 is raised to a desired height and fixed in position prior to lowering the tray onto it for tilting.

As shown in Figure 2, conveniently the trolley may be moved to a fixed sink 100 and then fixed in position on the floor by braking its wheels. The tray 50 may then be tilted such that its drainage end 52 overlaps the sink 100. An autopsy or embalming may then be performed on the tilted tray 50 with body fluids draining away into sink 100.

After completion of the operation, the tray 50 is returned to is horizontal position and then moved away on the trolley to a storage location.

## CLAIMS

1. A trolley having a base having ground engagement means for enabling the base to be moved across a floor, a body tray support adapted to support a body tray generally horizontally, elevation means operatively connected between the base and body tray support for raising and lowering the body tray support between a lowermost position and a highermost position, and tilting means mounted on the base for selective engagement with one end of a tray received on the tray support to arrest lowering movement of said one end of the tray when the tray support is lowered by the elevation means towards its lowermost position from a position above said tilting means to thereby cause the body tray to tilt.

2. A trolley according to Claim 1 wherein said tilting means is defined by an abutment which is engageable with said one end of the tray.

3. A trolley according to Claim 2 wherein said abutment is height adjustable relative to said base so as to enable the overall height of the tray and its inclination to the base to be adjusted as desired.

4. A Trolley according to Claim 1, 2 or 3 wherein said tray support is in the form of a horizontal conveyor to thereby enable a body tray to be slidably moved longitudinally onto the trolley to a transport positions.

5. A trolley according to Claim 4 when depended on Claim 2 or 3 wherein stop means are provided which are engageable with the tray to maintain the tray at said transport position, said abutment being located beyond said transport position in the longitudinal direction of the tray so as to be remote from said one end of the tray as it is raised and lowered by the elevation means.

6. A trolley according to Claim 5 wherein said tray support is adopted to permit the tray to be moved beyond said transport position so that said one end is able to engage said abutment.

7. A trolley substantially as herein described with reference to and as illustrated in the accompanying drawings.

8. A method of tilting a body tray on a trolley according to any of Claims 1 to 7, the method including raising the tray support to a height above said tilting means, moving the tray and/or tilting means so as to cause engagement of one end of the tray with the tilting means on lowering of the tray support towards its lowermost position, and continuing to lower the tray support to a desired height in order to cause the body tray to tilt by a desired amount.

The Patent Office

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**Application No:** GB 0026270.9 **Examiner:** Guy Robinson
**Claims searched:** 1 to 8 **Date of search:** 7 February 2002

# Patents Act 1977
# Search Report under Section 17

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): B7B (BTF2, BTL2, BTX1)

Int Cl (Ed.7): A61G 1/013, 13/00, 13/04

Other: ONLINE: (WPI, EPODOC, JAPIO)

**Documents considered to be relevant:**

| Category | Identity of document and relevant passage | | Relevant to claims |
|---|---|---|---|
| X | GB 2329614 A | (HUNTLEIGH) figs 2 & 3 & page 3 lines 14 to 18 | 1 to 3 |
| A | GB 2319226 A | (SLOCOMBE) | - |
| X | US 5435027 | (FERNO) figs & col 4 lines 16 to 63 | 1 to 4 |
| X | US 4052097 | (WEIL) figs 7A to 8D & col 3 line 57 to col 4 line 4 & col 5 lines 22 to 51 | 1 to 3 |

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| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
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(12) UK Patent Application (19) GB (11) 2 390 062 (13) A

(43) Date of A Publication 31.12.2003

(21) Application No: 0315058.8

(22) Date of Filing: 27.06.2003

(30) Priority Data:
(31) 0214813 (32) 27.06.2002 (33) GB

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(51) INT CL[7]:
A61G 3/02 // A61G 1/06

(52) UK CL (Edition V.):
B7B BLB B280

(56) Documents Cited:
GB 2351439 A US 5662627 A
US 4352991 A

(58) Field of Search:
UK CL (Edition V ) B7B
INT CL[7] A61G
Other: Online: EPODOC, WPI, JAPIO

(54) Abstract Title: **Patient transportation apparatus**

(57) A patient transportation apparatus, in the form of a stretcher is provided with at least one electrical connector which, in use, is automatically connected to an electrical connection in a vehicle (e.g. an ambulance). The connection in the vehicle is capable of transferring power whereby a battery provided on the stretcher may be charged. The connection is preferably made by virtue of the stretcher being moved forwards. The stretcher may have a pair of spaced contacts (220, 222), on a plate (210) mounted on the axle (218) of the stretcher, arranged to be brought into engagement with charging points (224, 226), a micro switch being activated when the connection is made. The charging points are preferably spring biased to urge the contact points into engagement.

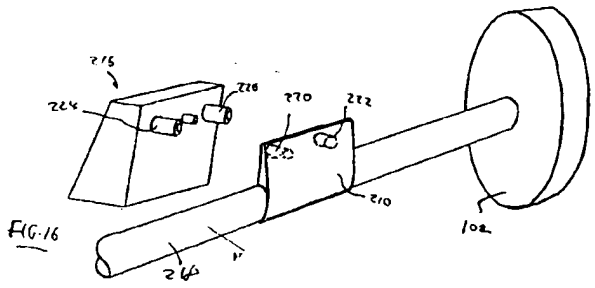



FIG. 16

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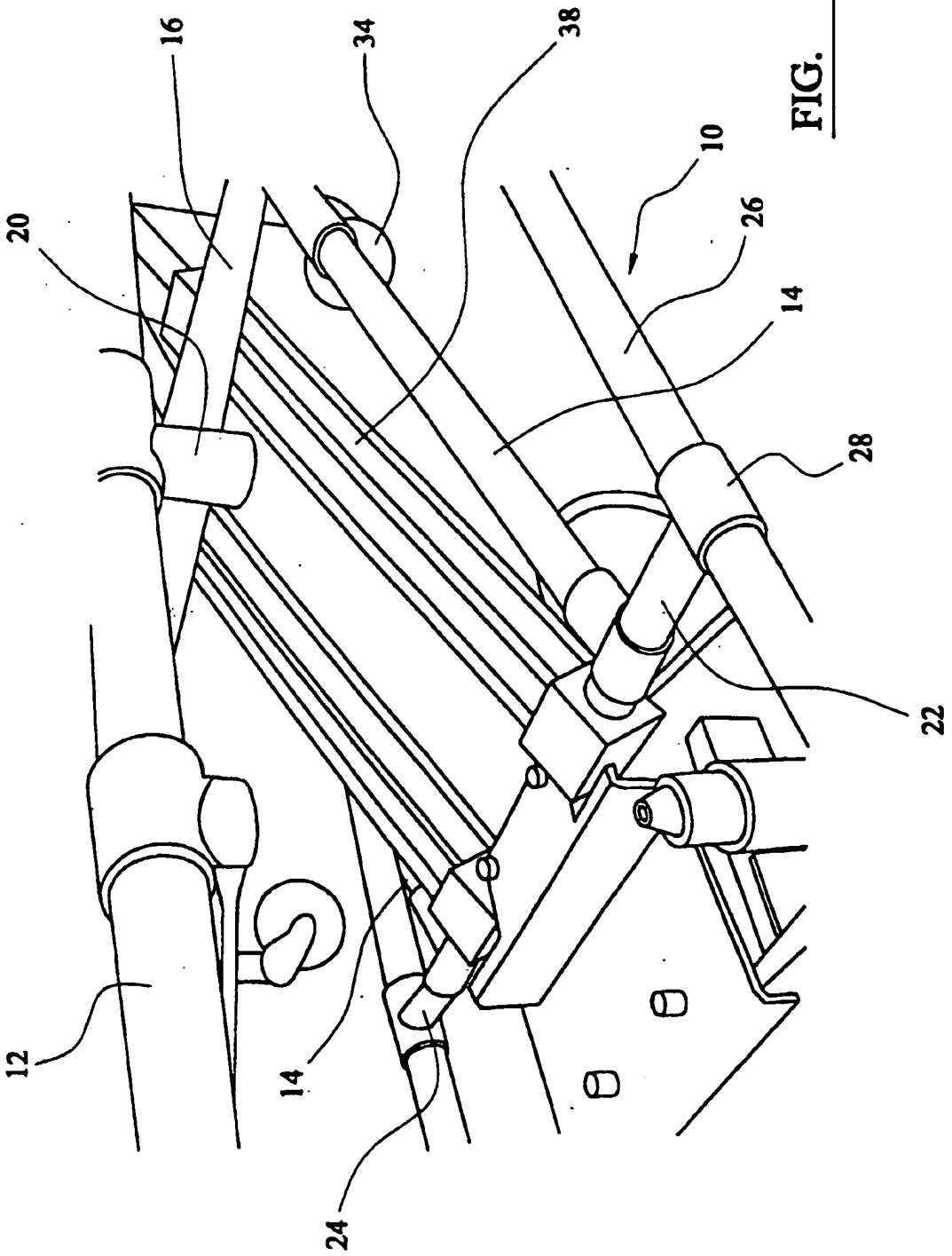



FIG. 1

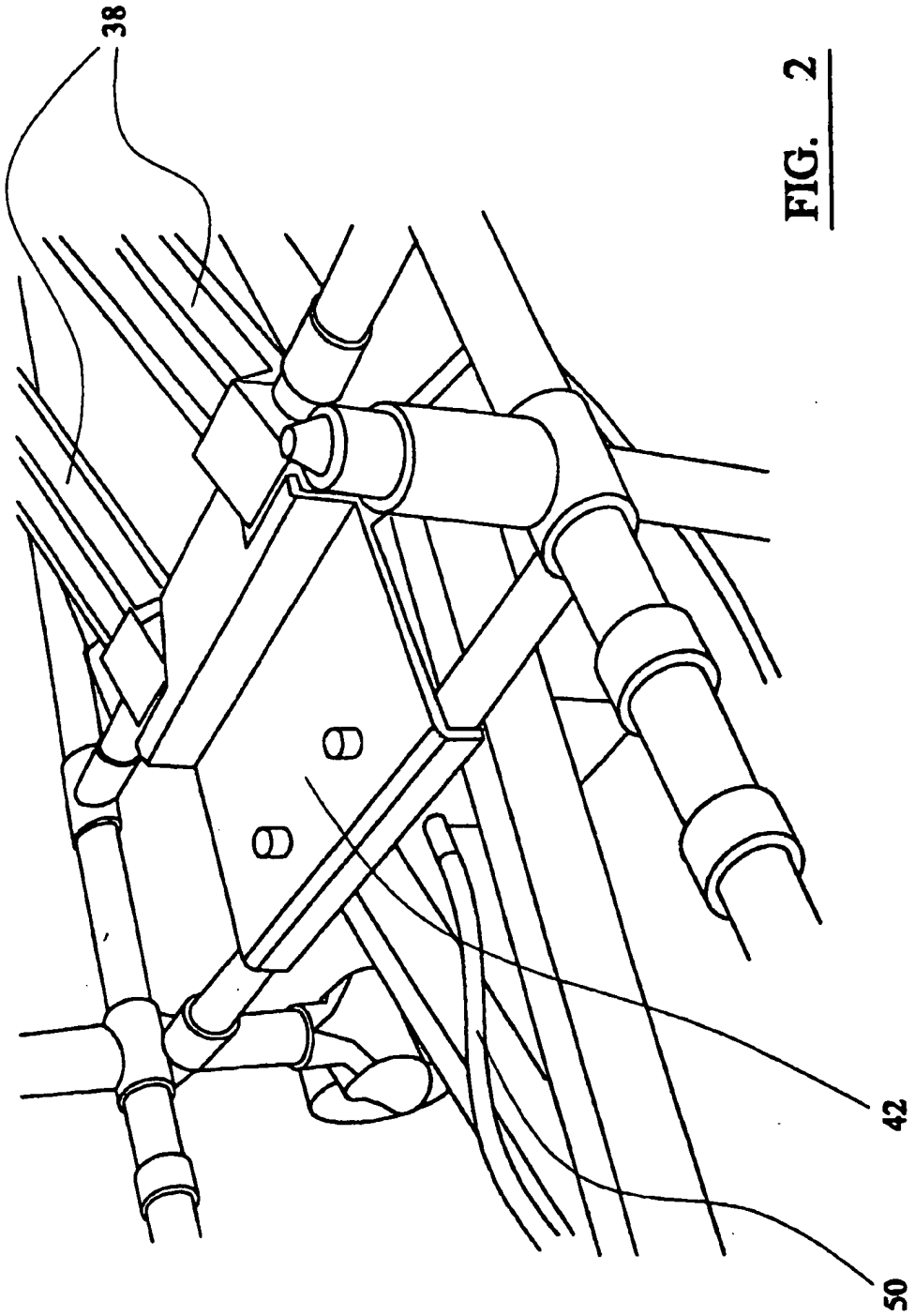



FIG. 2

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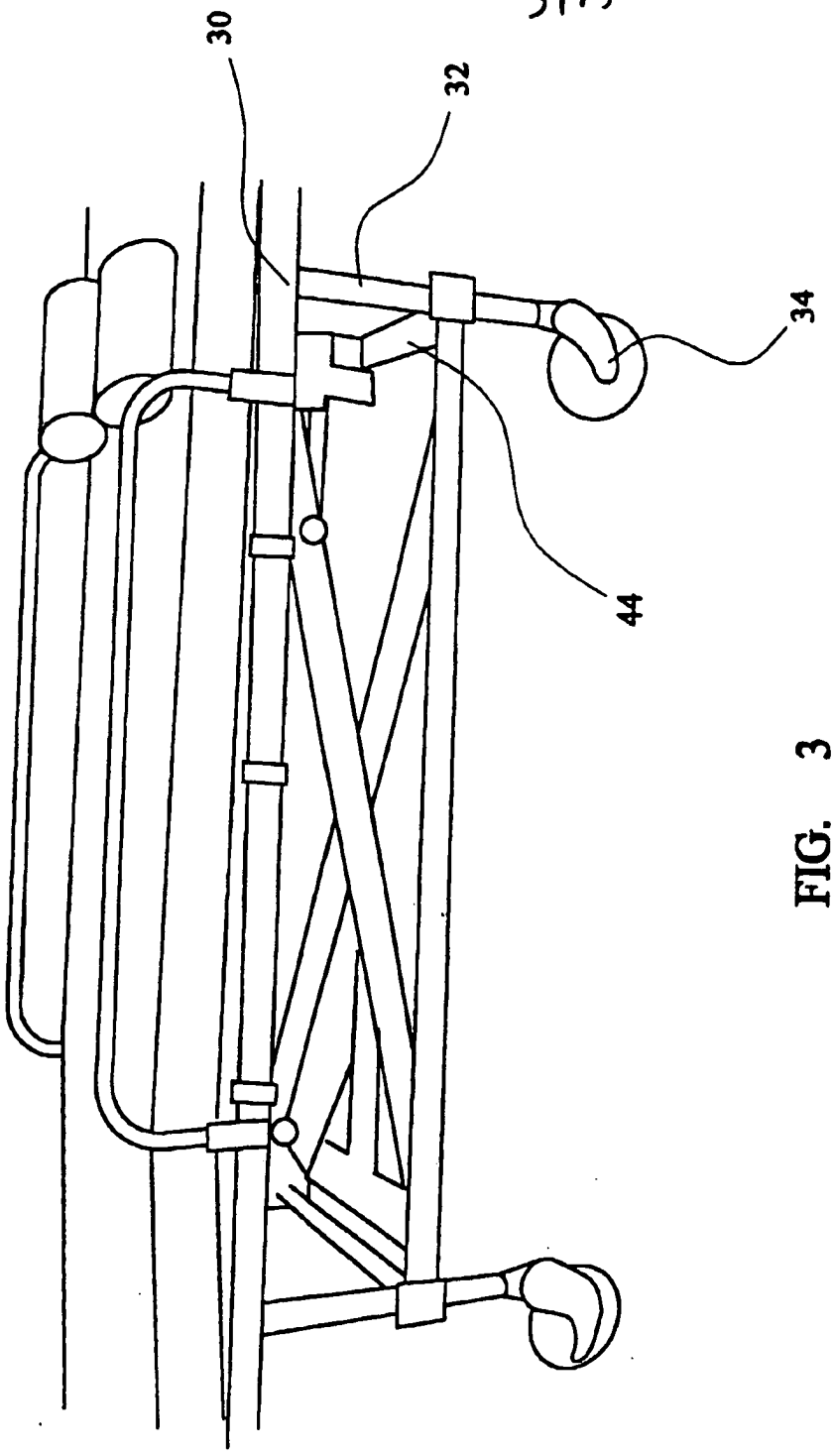



FIG. 3

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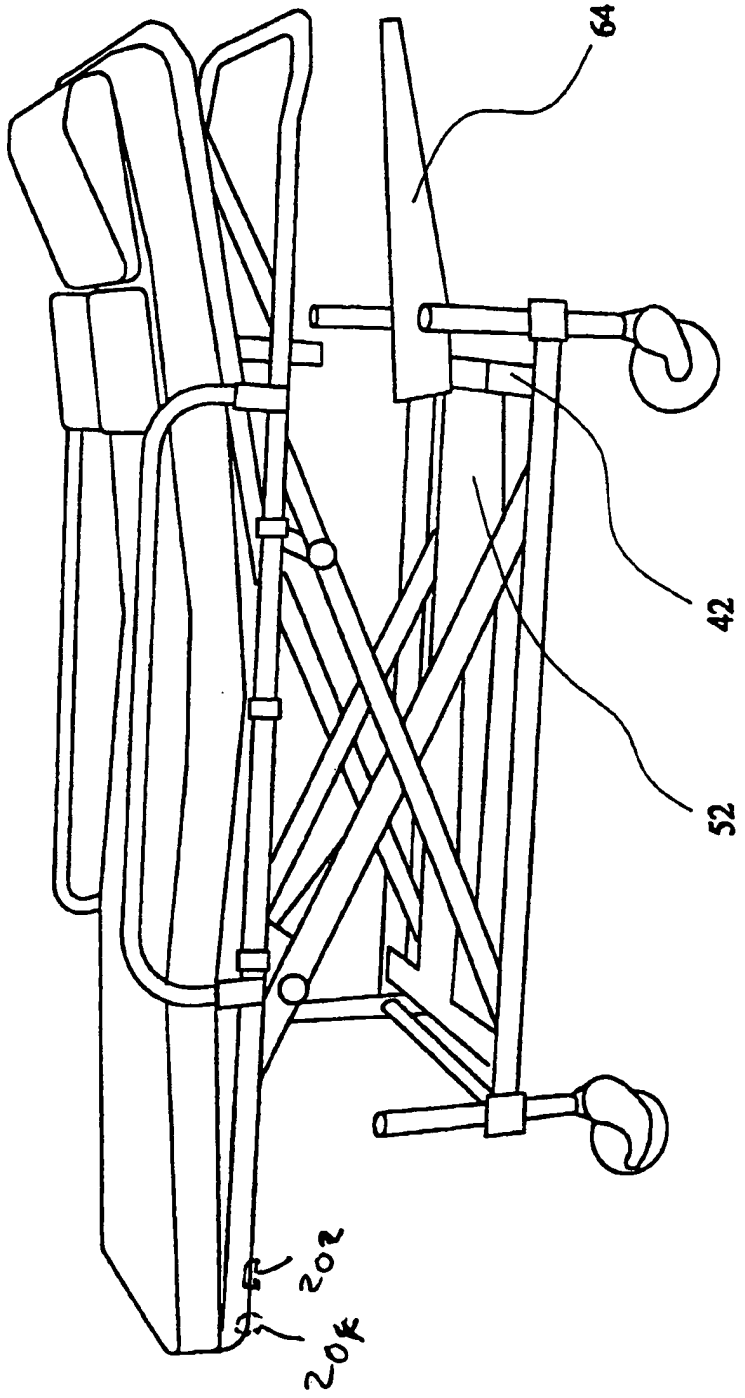



FIG. 4

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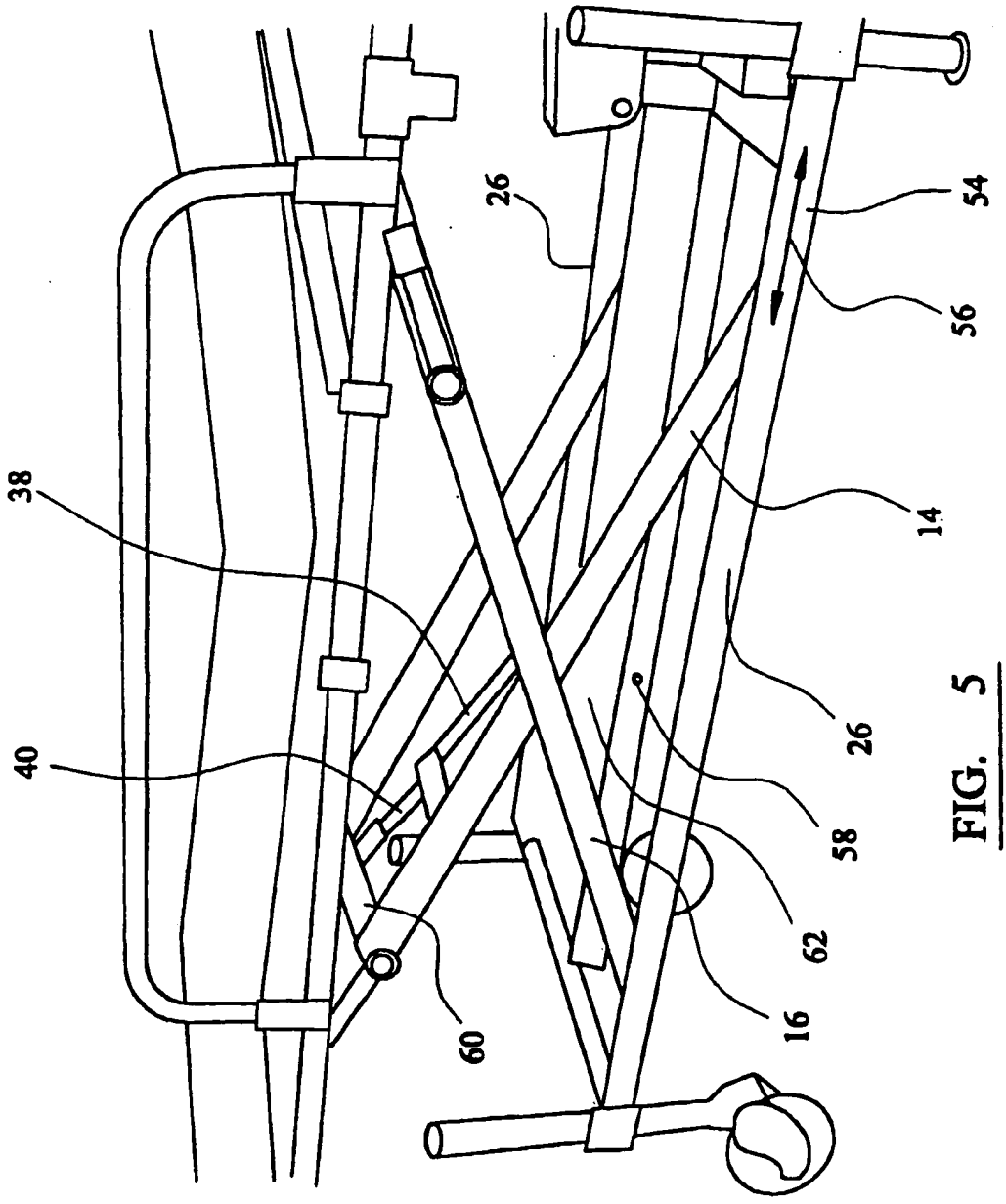



FIG. 5

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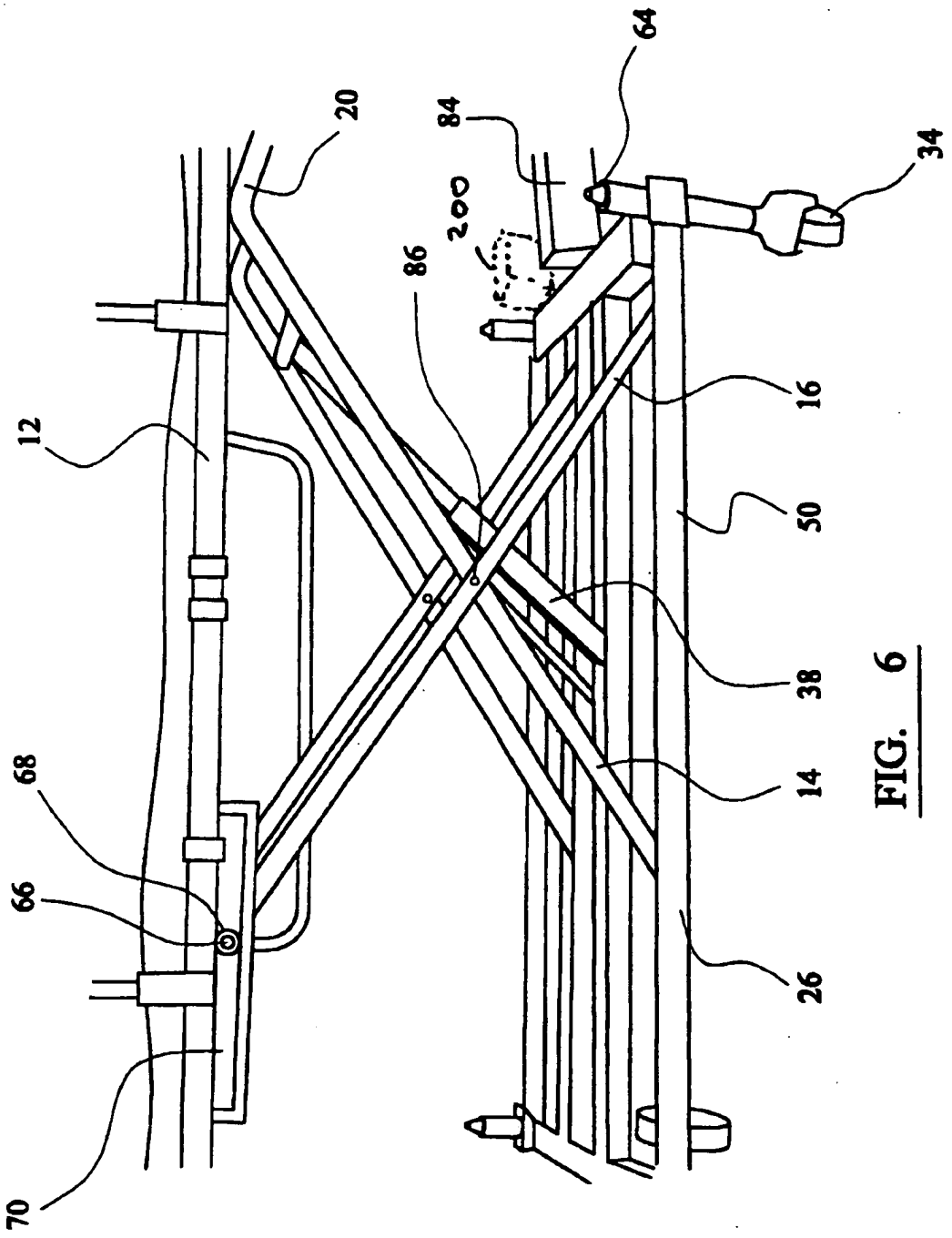



FIG. 6

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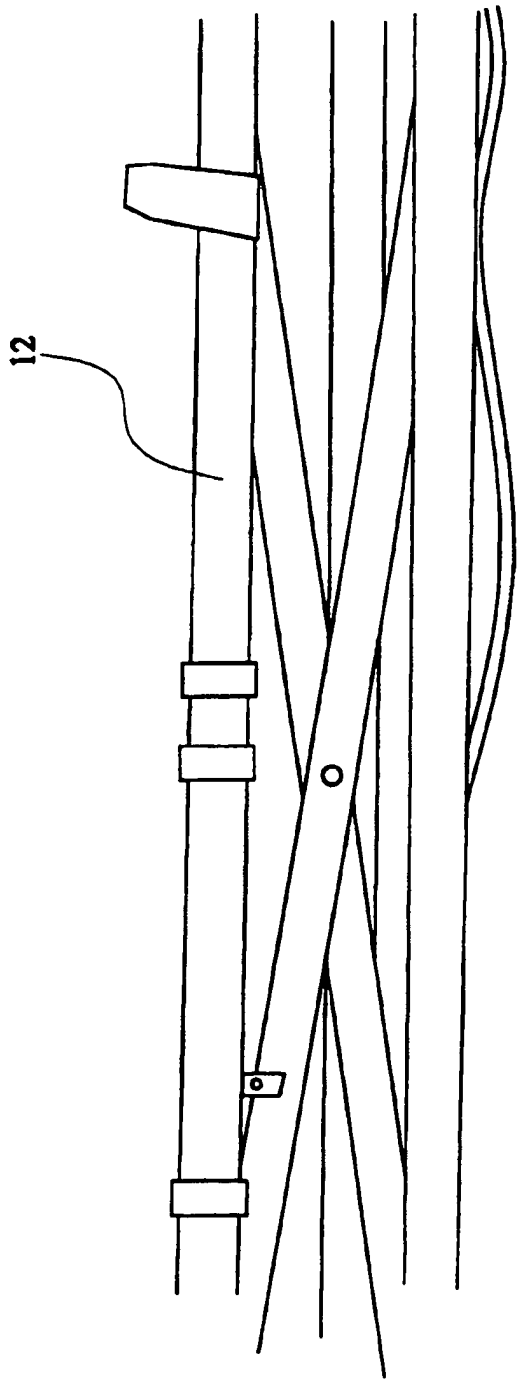



FIG. 7

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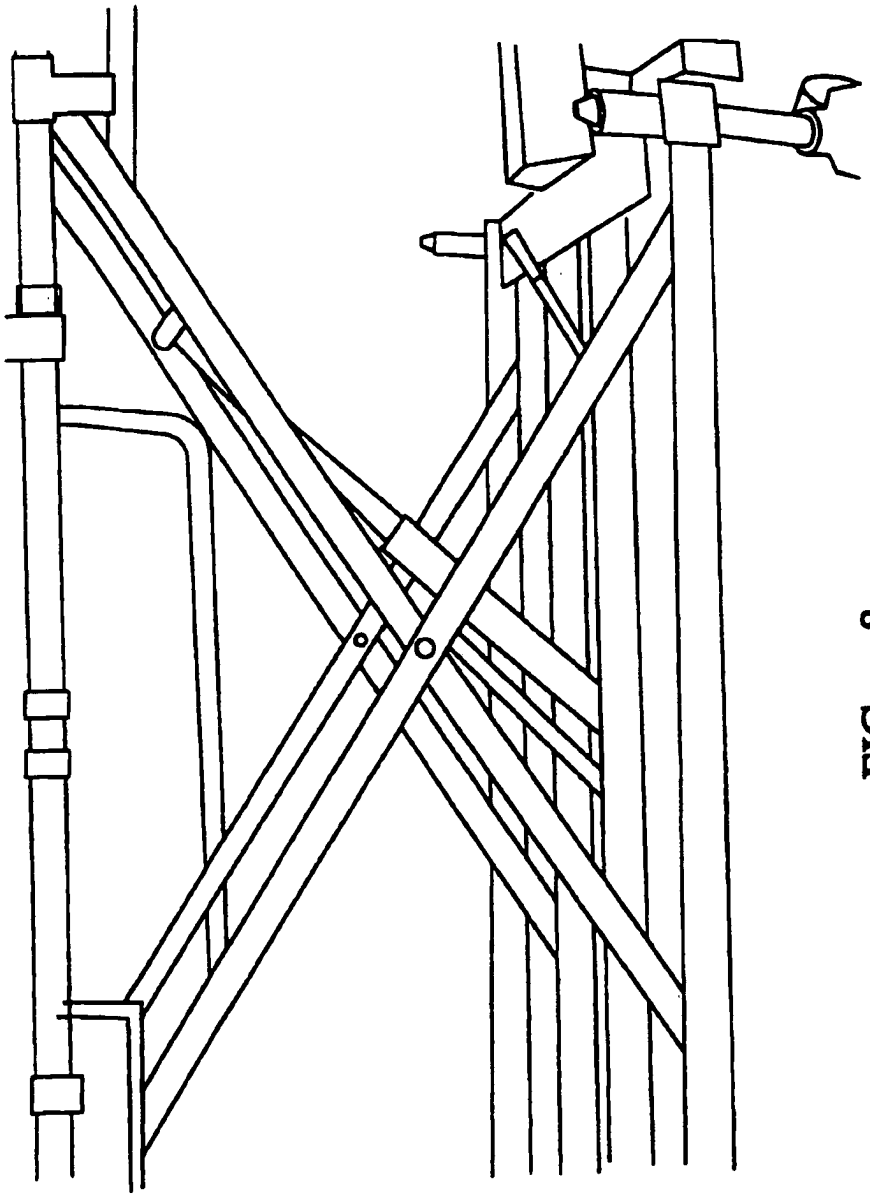


FIG. 8

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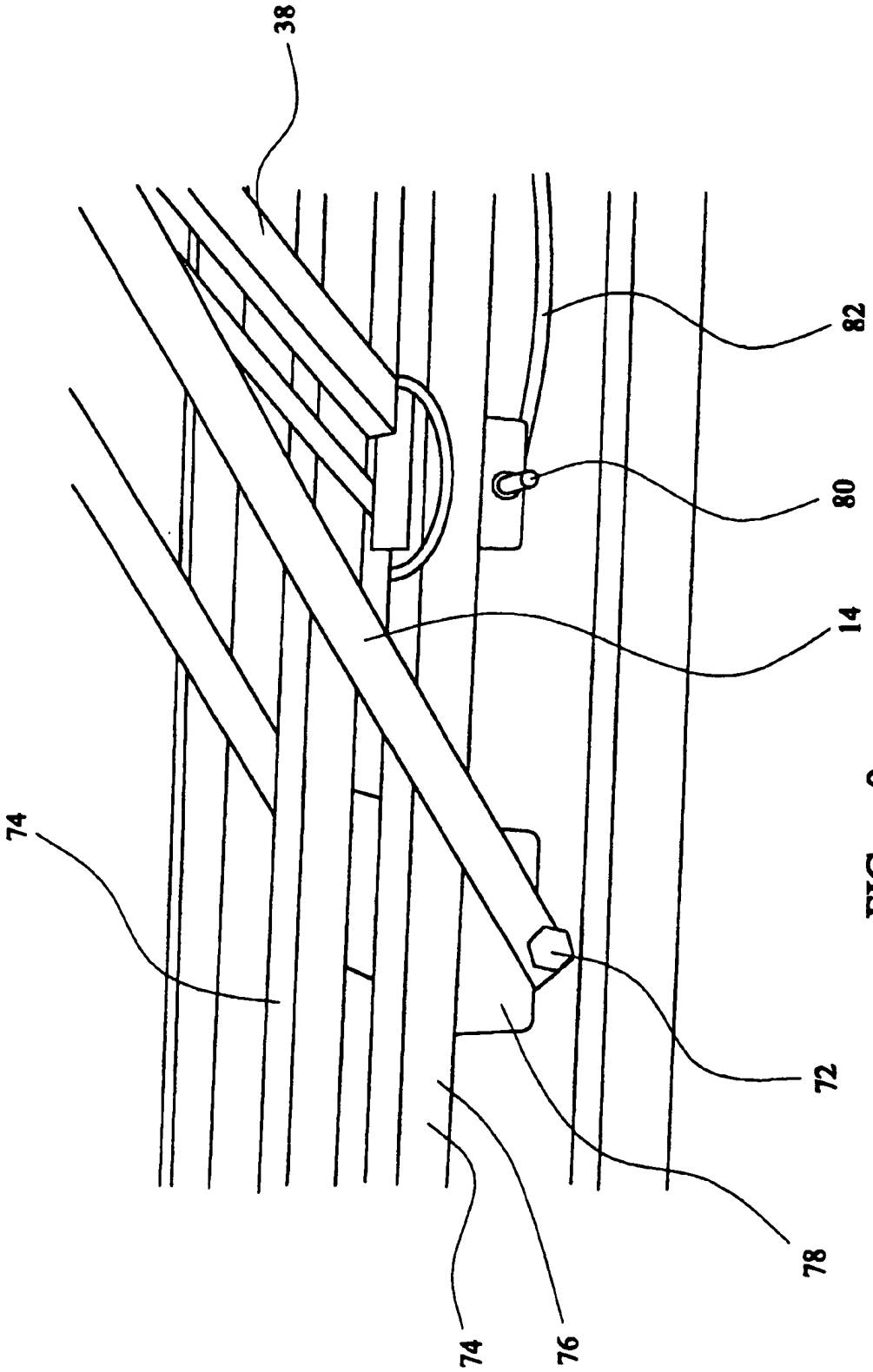



FIG. 9

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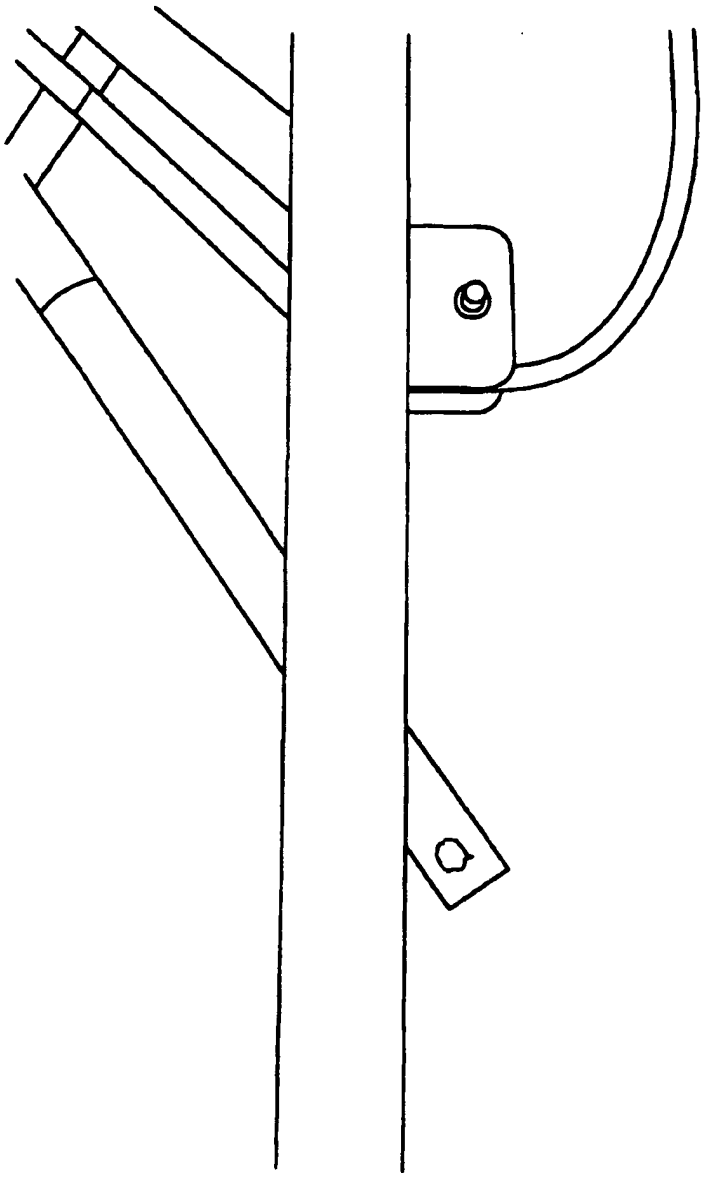


FIG. 10

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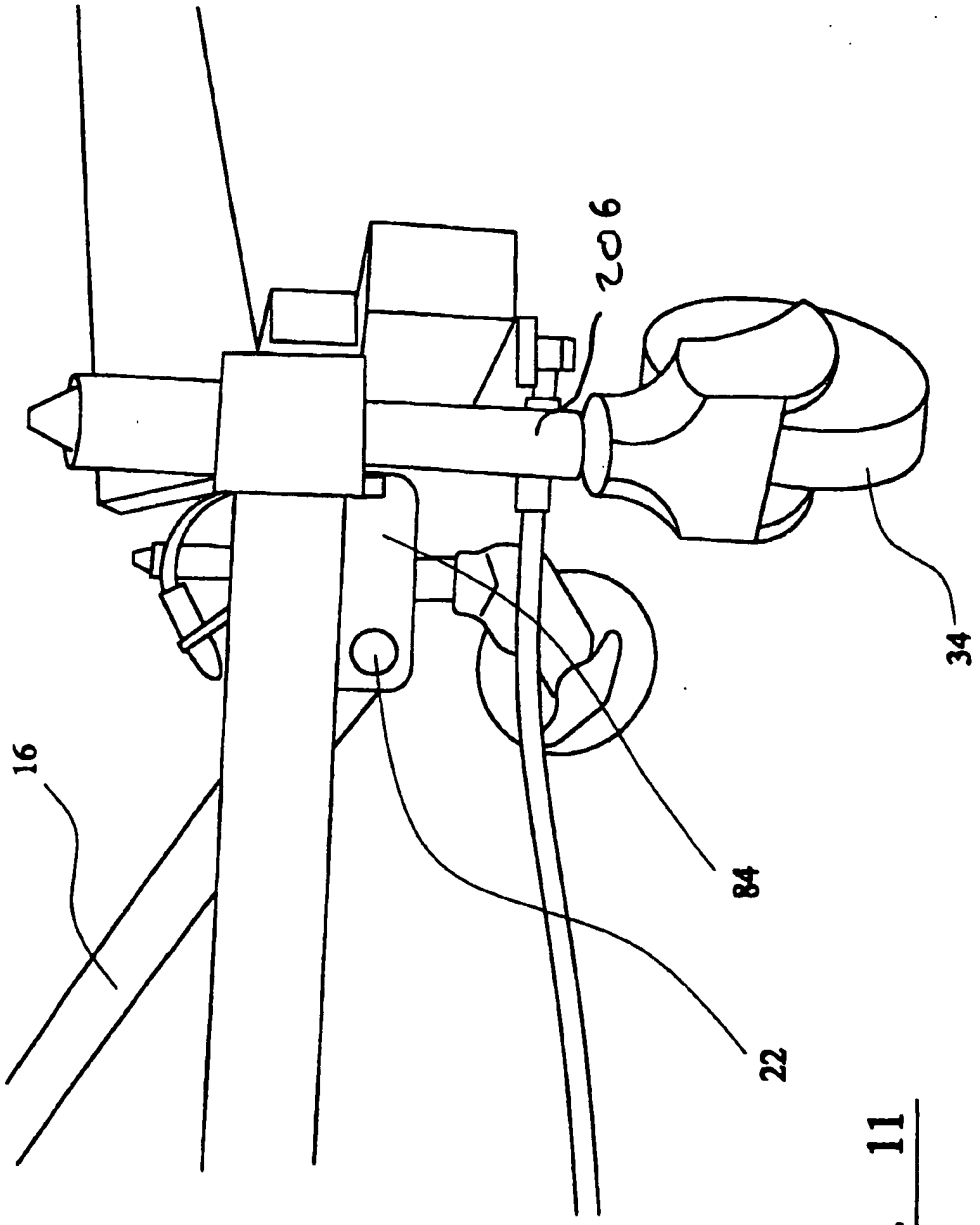



FIG. 11

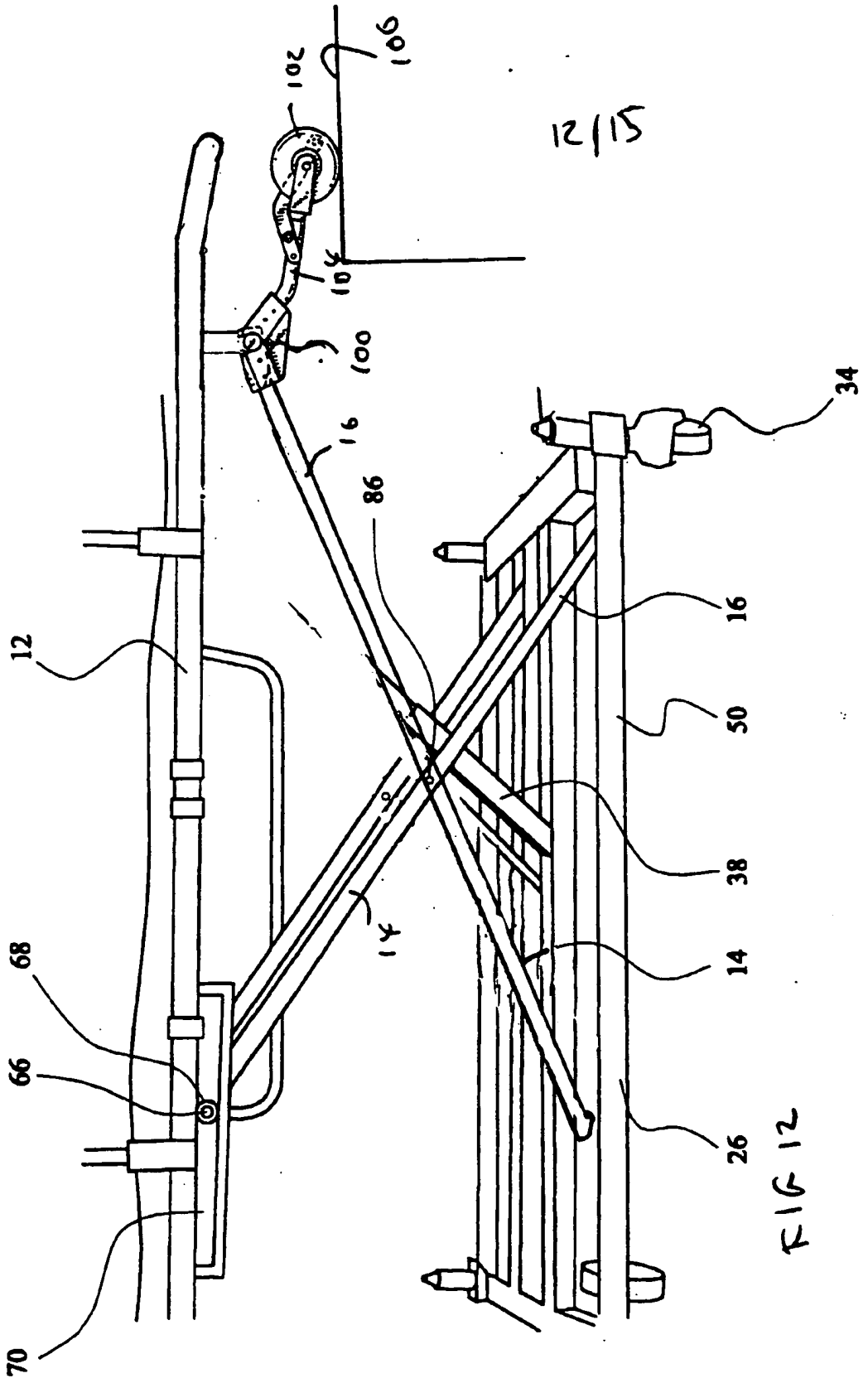



FIG 12

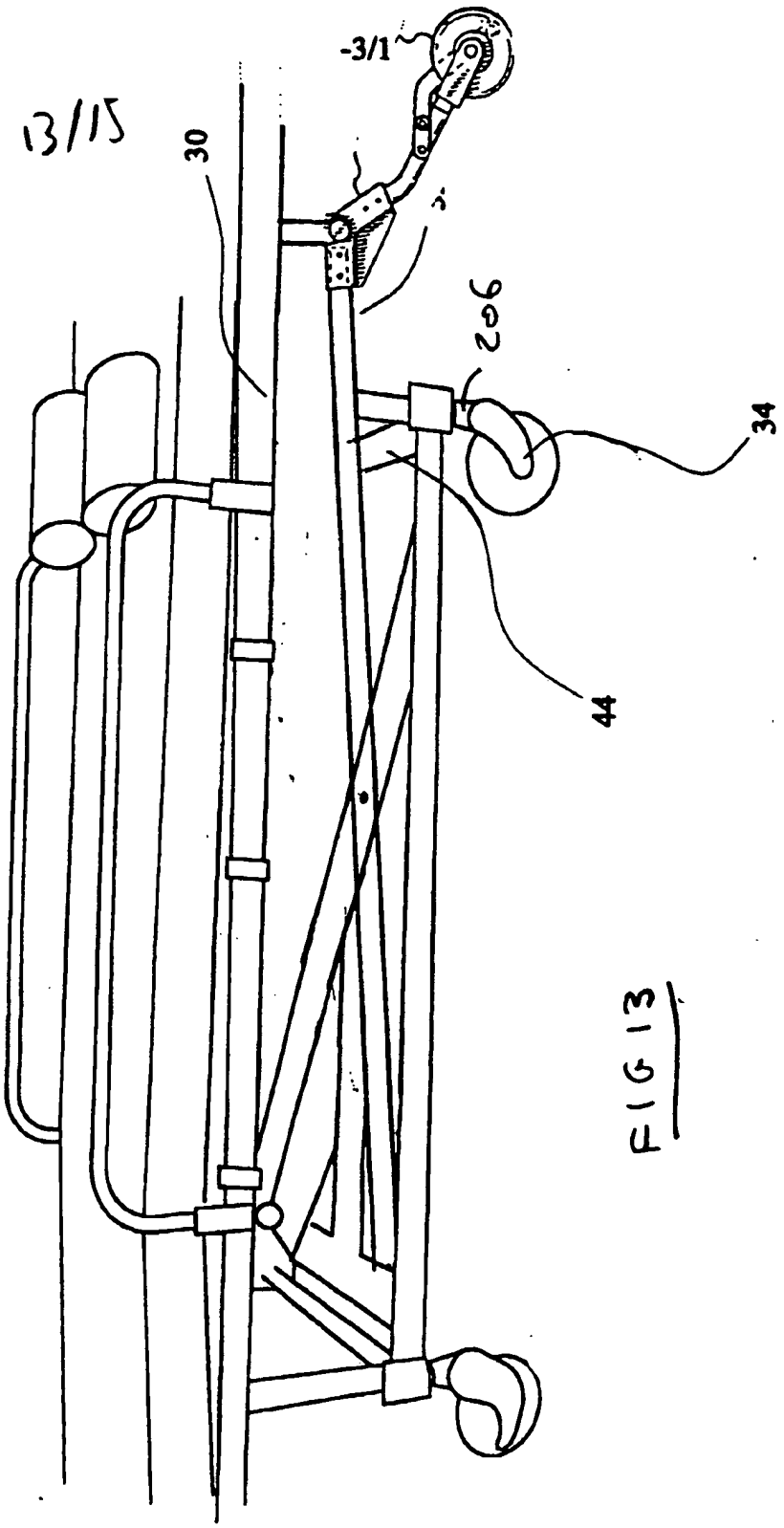



FIG 13

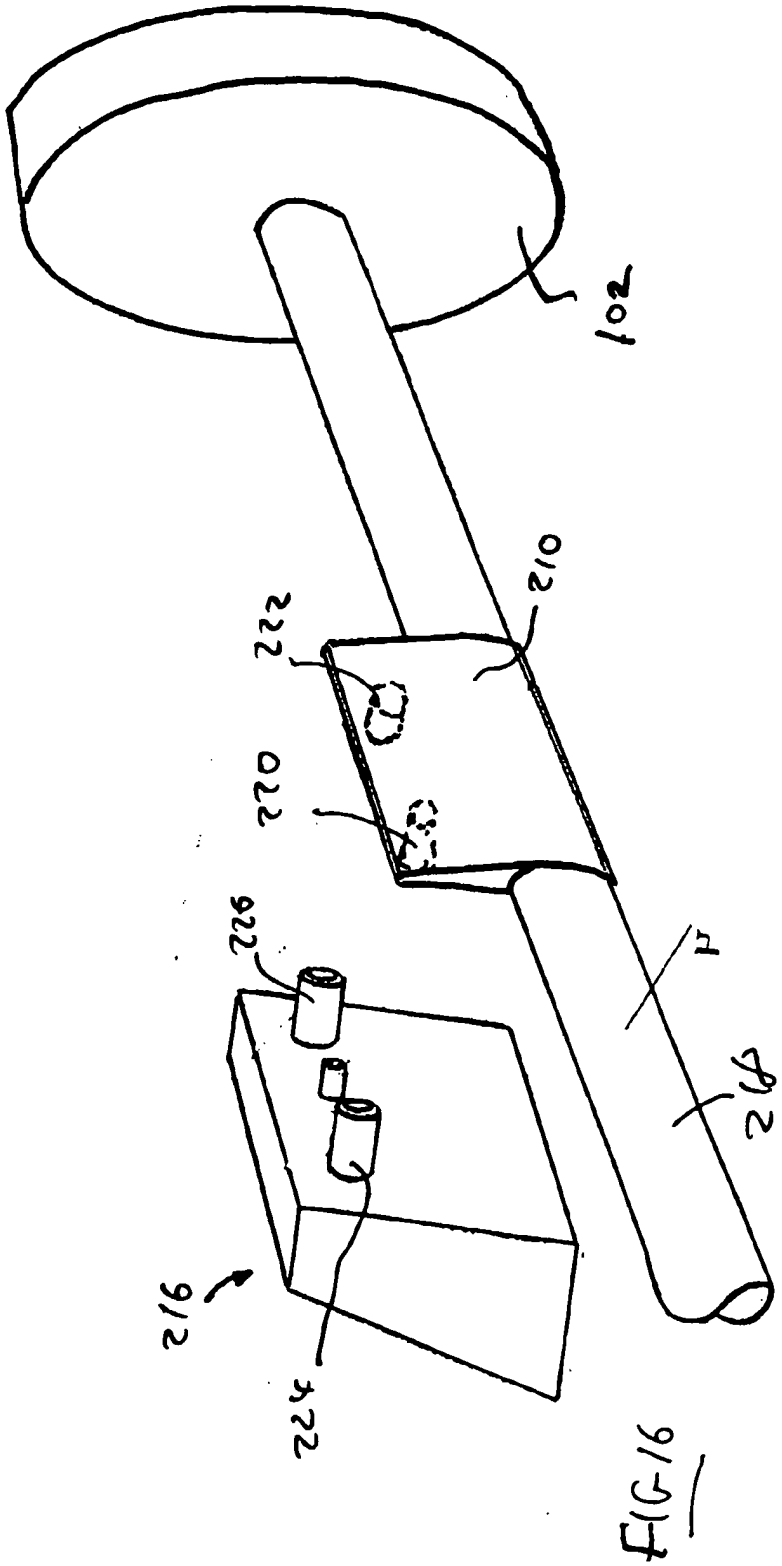



FIG 16

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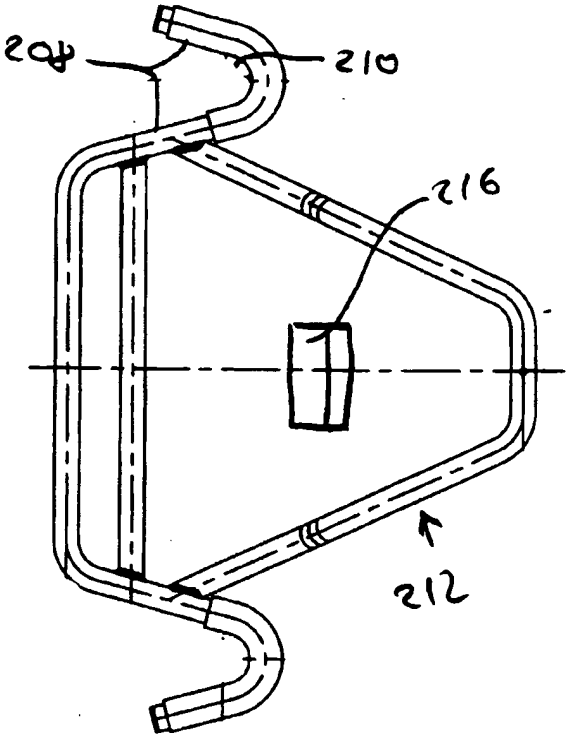



FIG 14

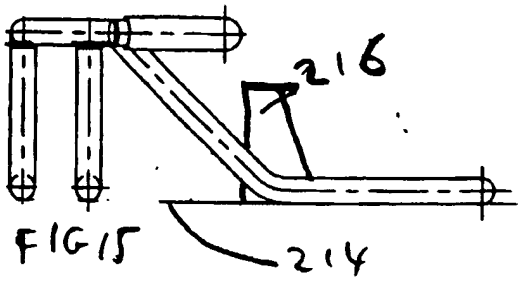



FIG 15

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# Patient Transportation Apparatus

The present invention relates to a patient transporation apparatus, a vehicle with a patient transportation apparatus located therein and a method of electrically connecting a patient transportation apparatus to vehicles. It will be appreciated that "vehicles" includes ambulances, aircraft and helicopters, for instance.

When patient transportation apparatus is manoeuvred into and out of ambulances this is often done in a hurry as the patient transportation apparatus operatives may need to treat the patient urgently. Consequently the operatives will naturally concentrate on the patient rather than any peripheral activity. Their prime concern is to the patient.

Thus if a patient transportation apparatus has a battery this will often be left to discharge rendering the operation of the battery useless.

It is an object of the present invention to attempt to overcome at least one of the above or other disadvantages.

According to one aspect of the present invention, a patient transportation apparatus is provided with at least one electrical connector arranged, in use, to be automatically connected to an electrical connection in a vehicle, the connection in a vehicle being arranged to be capable of transferring power to the connector of the patient transportation apparatus whereby a battery on the patient transportation apparatus may be charged.

The patient transportation apparatus may be arranged to be releasably retained in the vehicle.

The connector on the patient transportation apparatus may be arranged to be connected to the connection of the vehicle by virtue of forward movement of the patient transportation apparatus into the vehicle. The connector of the patient transportation apparatus may be arranged to face forwardly with respect to the movement of a patient transportation apparatus into a vehicle.

At least one of the connection or the connector may be biased, for instance spring biased, such that, in use, when the connection is made, the connector and connection are urged into contact with each other.

At least one of the connection or connector may diverge outwardly towards the other. At least one of the connection or connector may flex during connection such as against a resilient force and may flex outwardly when receiving the other of the connection or connector.

In use, when the connector and connection are connected, the vehicle may include a sensor such as a micro switch that determines that the connection is made.

The connector may be provided on a lower frame or upper frame of a patient transportation apparatus, the upper frame and the lower frame being movable relative to each other from a first position, in which the frames are spaced from each other and a second position in which the frames are closer together.

The connector may be provided on a downwardly extending leg of a patient transportation apparatus from which a wheel of the patient transportation apparatus depends. Alternatively, the connector may be provided on a cross member of a stretcher such as an axle, for instance a loading wheel axle of the stretcher.

The patient transportation apparatus may include two connectors arranged, in use, to be connected to two connections in an ambulance.

The present invention also includes an ambulance with a patient transportation apparatus located in the vehicle with the patient transportation apparatus being as herein referred to, the or each connector of the patient transportation apparatus being connected to the or each connection of the vehicle.

The battery may be arranged to be charged when, in use, the connector of the patient transportation apparatus is connected to the connection of the vehicle and power is being supplied from the connection to the connector.

According to a further aspect of the present invention, a method of electrically connecting a patient transportation apparatus to a vehicle to supply power to a battery on the patient transportation apparatus comprises automatically causing that electrical connection to be made.

The method may comprise moving the patient transportation apparatus relative to the vehicle with that relative movement automatically causing the connection to be made. The method may comprise moving the patient transportation apparatus into the vehicle to cause the connection to be made.

The method may comprise guiding that movement during loading to ensure electrical connection is made.

The method may further comprise automatically causing electrical disconnection of the patient transportation apparatus from the vehicle when the stretcher commences movement out of the vehicle.

The present invention also includes a method as herein referred to when the patient transportation apparatus is as herein referred to.

The patient transportation apparatus may comprise a stretcher.

The present invention can be carried into practice in various ways but several embodiments will now be described by way of example and with reference to the accompanying drawings, in which:

Figure 1 is a side view of the front end of a first embodiment of a stretcher trolley in a partially raised position;

Figure 2 is a view similar to Figure 1;

Figure 3 is a view similar to Figure 1 with the upper frame in the fully collapsed position;

Figure 4 is a side view of an alternative stretcher trolley in the raised position;

Figure 5 is a view similar to Figure 4;

Figure 6 is a side view of an alternative stretcher trolley in a raised position;

Figure 7 is a detailed view showing the trolley in Figure 6 in a fully collapsed position;

Figure 8 is a view similar to Figure 6 showing more clearly the operative components that allow the trolley of Figure 6 to be raised and lowered;

Figure 9 is a detailed view showing the pivot points for an hydraulic cylinder and one of the cross members;

Figure 10 is a side view from underneath showing the corporation of one of the cross members and the pivot point of the hydraulic cylinder with the lower frame;

Figure 11 is a view showing the hydraulic pump of the trolley together with a pivot point of the other cross member;

Figures 12 and 13 are views of a trolley in a raised and lowered position respectively;

Figures 14 and 15 are a plan and a side view respectively of a locating bracket mounted on an ambulance floor; and

Figure 16 is a perspective view showing the parts of the stretcher and the ambulance that cooperate to charge a battery on the stretcher.

Figures 1 to 11 are as described in our copending application number 99 07160.7 published under number 2 348 359 the contents of which are hereby incorporated.

Like components will be given the same reference numeral in the different figures.

In Figures 1 to 3 a lower frame 10 is connected to an upper frame 12 by a first pair of parallel cross links 14 and a second pair of parallel cross links 16. The links 14 and 16 are pivotally connected at an intermediate location by a rod (not shown). The upper frame is connected to each of the links by a pivot 20 (only the pivot for the second cross links 16 is shown). The lower end of each of the cross links 14 and 16 are connected to the lower frame by a

pivot 22 (only the pivot 22 with the cross links 14 is shown).

The pivot 22 for the cross links 14 is provided by having an "I" shaped bar 24 extending across the two spaced parallel side members 26 of the lower frame 10. The bar 24 engages each of the side members 26 by a tube 28 surrounding the side members 26 and being secured thereto. The central round portion of the "I" bar that extends between the side members 26 is engaged by the cross links 14 with a tubular section at the end of those cross links 14 pivotally surrounding the bar 24. Similar "I" shaped bars engage the other points of pivotal connections at the upper end of each of the cross links and at the lower end of the other cross link 16 (not shown). In addition though for the lower connection of the cross link 16, instead of the tube 28 being fastened to the side member 26, at the location where the lower end of the cross link 16 is connected to the side member 26, that tube is able to slide along the side member 26 towards or away from the point of connection of the cross link 14 to the lower frame.

It can be seen that the upper frame can be raised or lowered away from or towards the lower frame with the movement being guided by the pivotal connections of the cross links with the respective frames and with the connection of the cross link 16 to the side member 26 sliding respectively towards or away from the connection of the cross link 14 to the frame.

In the lower position shown in Figure 3 parallel side members 30 of the upper frame rest on upstanding pillars 32 that extend from each of the four corners of the lower frame. Wheels 34 depend downwardly from each of the four corners of the lower frame to provide the means for manoeuvring the stretcher trolley.

The upper frame has a mattress 36 located thereon to support patients whilst they are being manoeuvred.

All of the above description relates to conventional well known stretcher trolleys.

In addition though the stretcher trolley shown in Figures 1 to 3 includes means for raising and lowering the upper frame without the operator having to lift and lower the upper frame directly. These means comprise an hydraulic cylinder 38 that is pivotally connected to the "I" shaped bar 24, between the locations where the cross links 14 are connected to that bar. A piston 40 from the cylinder 38 is pivotally connected to the "I" shaped bar to which the upper ends of the cross links 14 are connected to the upper frame, between those points of connection. Thus it can be seen that when the piston 40 is extended from the cylinder 38 the upper frame will be raised with the motion of the links being as described above. Conversely, when a piston 40 is retracted into the cylinder the upper frame will move down towards the lower frame, ultimately reaching the position shown in Figure 3.

Fluid to cause the hydraulic cylinder to move is provided by a pump 42. This pump 42 is connected to a cross member 44 that extends between the side members 26 of the lower frame at a location towards the front of the trolley.

A pump lever 64 extends from the pump 42 towards the front of the trolley and a parallel release lever 48 extends adjacent to the pump lever 64 in the same direction.

The pump lever 64 is pivotally mounted on the pump 42 and is biased towards an upper position. An operator standing at the front of the trolley can depress the pump lever repeatedly to cause fluid from the pump to flow through a flexible tube 50 to the lower end of the hydraulic cylinder

38 to force the piston 40 out of the housing to raise the trolley.

If desired there can be a restriction neck in the fluid flow, either in the pump or in the housing, to ensure that, in spite of the fact that the pump lever is being repeatedly depressed and then raised and then depressed again, the increase in fluid in the hydraulic cylinder is at a substantially constant rate to allow the trolley to be raised evenly. The pressure alone in the hydraulic cylinder can, if necessary, be sufficient for the upper frame to remain in a raised, or the upper position.

The hydraulic system may include a restrictor that is arranged to come in to operation when a patient in excess of 27 stones or 181.4kg is placed on the trolley. The restrictor may act to block the hydraulic fluid flow necessary to push the hydraulic piston out of the cylinder to prevent the upper frame from being raised. This safeguards the trolley and ensures that it operates within its normal limits, without undue strain and prevents operators from abusing the trolley.

In order to cause the upper frame to move towards the lower frame the release lever can be depressed by the operator. This release lever may either be fully depressed or may be partially depressed to control the rate of descent. In this respect, the partial depression of the release lever will allow a slower rate of descent. Alternatively, there may be a restriction in the fluid flow from the hydraulic cylinder to the pump to ensure that the rate of descent is even and, alternatively or additionally, to ensure that the rate of descent does not exceed a predetermined speed, for example, for a given weight on the upper frame.

Raising of the upper frame from the bottom position to the top position may be arranged to be achieved by twelve

depressions of the pump lever 64. A restrictor may be included in the hydraulic cylinder such that, in the event that the flexible tube 50 fractures or in the event that there is a leak elsewhere in the system, descent of the trolley is slow and at a safe speed.

Although not shown, a sensor may be provided to give an indication of the weight of a patient on the trolley. This sensor may comprise a strain gauge located at an appropriate place, for instance on the piston 40 . The sensor alternatively could be a sensor of the pressure in the hydraulic cylinder or the pump which is proportional to the weight of a person on the trolley. The sensor could be arranged to indicate the weight of that person and, alternatively or additionally, could indicate when a person is too heavy for the specified weight of the trolley.

The trolley shown in Figures 4 and 5 will now be described. However, it will be appreciated that this trolley may have any of the features of the above described trolley as indeed may the trolley shown in Figures 6 to 11.

In Figures 4 and 5 the upper pivot mountings of the cross links 14 and 16 are as described above. The lower pivot point of the links 16 though is provided by pivotally connecting the links with a central beam 52 that is connected to the lower frame 10 at each end and that extends between and parallel to the side members 26.

The forward end of the cross links 14, at the lower end thereof, are pivotally connected to the beam 52 and are also slidable along a rail mechanism 54 in the directions shown by the arrows 56.

The hydraulic cylinder 38 is pivotally connected to the beam 52 by a rod 58. The pivot 58 is located between the points of connection of the cross links 14 and 16 to the

beam 52. The upper end of the piston 40 is connected to a cross member 60 that extends between the cross links 14 towards the top of those links. The beam 52 includes an opening 62 that the cylinder can move into when the upper frame is moved back down towards the lower frame.

The pump 42 is located towards the front of the trolley. In this embodiment though a single operating lever 64 is biased towards an intermediate position whereby, repeated depression of the lever 64 against a resilient bias causes fluid to enter the cylinder to power the piston out and to move the upper frame away from the lower frame. In addition the lever 64 can be raised from the position shown to cause fluid to be able to move from the hydraulic cylinder back into the pump thereby allowing the upper frame to move down towards the lower frame.

Restrictions can be provided as referred to in the first embodiment.

It can be seen that the frame can be lifted and lowered under a controlled force without an operator ever having to touch the upper frame to urge it upwardly, or to resist its upward movement or to push the upper frame downwardly or to support the upper frame whilst it is moving downwardly.

In the embodiment referred to in Figure 6 to 11 cross links 16 are pivotally connected to the base frame on the right hand side of those drawings by the pivot 22 shown in Figure 11. The other end of the cross links 16 are connected to the upper frame 12 by a pivot 66. This pivot 66 is mounted on a pair of grooved wheels 68 that are able to roll along a horizontal slot 70 depending downwardly from each side of the upper frame 12. The slot 70 is closed at either end.

A pair of parallel cross links 14 are pivotally connected to the upper frame by the pivot 20. The cross links 14 are

pivotally connected to the lower frame and are also able to slide horizontally relative to the lower frame.

Figure 9 shows how the lower end of the hydraulic cylinder 38 and the cross link 14 are connected to the lower frame. A pair of spaced parallel square section bars extend between the ends of the lower frame and within the lower frame. From the lower end of those bars projects a slide edge 76. A U-shaped bracket 78 has the top end of the U turned over to extend over each of the slide edges 76 with the bracket 78 then extending downwardly, beneath the bars 74 and across the bars 74.

The cross links 14 are connected to the bracket 78 by a pivot 72. The axis of the pivot 72 is beneath the lowermost extent of the bars 74. In this respect, the distance from the downwardly facing surface of the bars 74 to the floor is 248mm and the distance from the pivot 72 to the floor is 213mm.

The hydraulic cylinder 38 is connected by a pivot 80 to a U-shaped bracket 82 that is connected to the top of the bars 74 and extends over the upwardly facing surfaces of those bars and then downwardly, beneath those bars and across those bars 74. The pivot 80 is at a distance of 213mm from the floor.

As shown in Figure 11, the cross links 16 are connected by the pivot 22, to a bracket 84 and extends downwardly from the side members of the lower frame. The height of the pivot 22 from the floor is 233mm.

When the upper frame moves to the position shown in Figure 6 to the position shown in Figure 7, the cross links move about their pivotal connections to the upper and lower frames respectively. The cross links 14 also move about their pivots 72 with the bracket 78 sliding along the edges

76, to the left when viewed in Figure 9. Also at the same time the cross links 16, at the upper end, move about the pivot 66 with the grooved wheels 68 rolling along the slot 70, to the left when viewed in Figure 6.

In use, the head of the patient is arranged to be approximately over the forward wheels 44 of the trolley. Most of the weight of a patient is in their upper torso. Accordingly, most of the weight of the patient, when the trolley is in the raised position, will be in the region of or between the points of connection of the cross links 14 and 16 with the upper and lower frames. Thus the support is provided for the patient by the cross links where it is most needed.

Furthermore, when the upper frame is raised relative to the lower frame, because of the action of the grooved wheels and the U-shaped frame 78, the upper frame is not tilted to any noticeable degree during the raising and lowering. In addition, the upper frame remains in its point of alignment with the lower frame so that only vertical movement occurs rather than the upper frame moving in the forward or rearward direction relative to the lower frame during raising and lowering. These are important features, particularly where the trolley is used in an ambulance for the reasons described below.

In an ambulance, space is extremely constricted. In the past, the trolleys have occupied a collapsed position only in the ambulances. That is because the trolleys have to be loaded into the ambulance in the collapsed position, and there is then not room for personnel to be located at either end within the ambulance to lift and lock and then lower the trolley. In the present invention, because of the hydraulic lift and lowering mechanism that is provided, it is only necessary for one operator to stand at the end of the trolley and then pump the lever with their foot. The

operator does not have to bend down and accordingly any space restriction behind the operator caused by that bending is not of relevance.

Furthermore, the hydraulic action allows the trolleys to be elevated to any height between the bottom and the top positions and held in those positions. Tests have shown that with the weight double that which can normally be expected on the trolley, there is no detectable descent of the trolley from a raised position over a 24 hour period.

The action of the trolley is assisted by the following dimensions of the cross links from their pivot points to the location of the pivot 86 where the cross links 14 and 16 are connected together.

The length of the cross link 14 from the pivot 72 to the pivot 86 is 431mm and the length of those links from the pivot 86 to the pivot 20 is 508mm. The length of the cross member 16 from the pivot 22 to the pivot 86 is 430mm and the length from that pivot 86 to the pivot 66 is 496mm.

Figure 7 shows the extent to which the upper frame can be lowered relative to the lower frame. From the top of the upper frame members 12 to the ground, in a collapsed position shown in Figure 7, is 422mm (with the distance from the lower portion of the lower frame to the ground being 248mm). The distance of the top of the upper frame members from the ground in the raised position is 900mm. This gives an idea of the versatility of the trolley.

The pivots 72, 80 and 22 are all located a significant distance beneath the lower frame allowing the trolley to occupy the compact position as shown in Figure 7. This also affords a mechanical advantage both for the hydraulic cylinder and the cross links 14 and 16 allowing the cross links to be able to be pushed up from that extremely

collapsed position, in which the cross links 14 and 16 appear almost parallel to each to the raised position shown in Figure 6.

Figures 12 and 13 show modifications that can be made to any of the previously described embodiments. In these figures, the forward end of the cross links 16 is connected to the upper frame 10 at a location forward of that shown in the previous figures. Adjustments to the lengths of the other cross links 14 and of the pivot point between the cross links may also be made, as may the connections of the hydraulic unit.

The forward end of the cross links 16 enter and are fast with an angled bracket 100. The bracket 100 is pivotally mounted about its angled part and support wheels 102 are connected to the bracket by an arm 104. Consequently, as the lower support moves up from the position shown in Figure 12 and to the position shown in Figure 13 the wheels 102 move from being relatively close to the upper frame to a position in which the wheels are spaced from the upper frame.

Figure 12 shows the stretcher about to be loaded onto the floor 106 of a vehicle such as an ambulance. Prior to the stretcher reaching that position an operative will push the rear of the stretcher towards the ambulance such that the wheel 102 is clear of the floor of the ambulance. The operative can then lower the upper frame towards the lower frame as previously described until the wheels 102 at either side of the front of the stretcher rest on the floor 106. At that time lowering can be halted. As the wheels are relatively close to the upper frame in this position, the height that the upper frame has to be raised to allow the wheels to rest on the floor is minimised. This is advantageous as the greater the height of the upper frame, the more unstable the stretcher is.

With the operative supporting the rear of the stretcher, without any lifting of the upper frame, the lower frame can then be moved relative to the upper frame until the stretcher is in the position shown in Figure 13 at which time the stretcher can be pushed in, again without lifting, to load the stretcher into the ambulance with the weight of the stretcher being transferred onto the wheels 34.

In the ambulance, although Figure 13 shows the wheels 102 being at a slightly greater height than the wheels 34, in practice the wheels 102 will be at the same height as the wheels 34 or very slightly higher.

To remove the stretcher the above described process is reversed. When the operative pulls the stretcher out it will eventually be supported by the wheels 102 alone. As these are almost at the same height as the wheels 34 there will be no sudden jolt which would be the case if the stretcher were to be dropped down when transferring the load from the wheels 34 to the wheels 102. The lower frame can then be moved relative to the upper frame as previously described, again without any raising or lowering of the upper frame by the operator, until the wheels 34 rest on the ground at which time the stretcher can be moved away from the ambulance.

It will be appreciated that, in the operative mode described in Figures 12 and 13, when the lower frame is brought up towards the upper frame, the hydraulic circuit will need to be powered as the weight of the lower frame has to be raised rather than in Figures 1 to 11 where the weight of the upper frame assists in the collapsing movement. Conversely, when the lower frame is being moved away the upper frame, power will not necessarily be required in Figures 12 and 13 as compared to Figures 1 to

11 where the weight of the upper frame and the patient has to be lifted.

If desired suitable valves may be provided, which, may be manually or automatically operated to control the direction in which power is supplied or to allow a slow bleed of the fluid.

In place of the front pump lever 84 to power the hydraulic circuit, a motor 200 (shown in Figure 6) may be used. Thus an operative, who may be at the rear of the trolley, may be able to actuate a switch 202, (shown in Figure 4) to cause the motor to raise the lower frame up to the upper frame, when loading. Alternatively or additionally, an operative may be able to actuate a switch 204 at the rear of the trolley to allow pressure to be released or to cause the motor to be powered to cause the lower frame to move downwardly. With such a mode of operation, an electric actuator may be used in place of the hydraulic actuator. Such an electric actuator may comprise a threaded member whose effective length can be increased or decreased upon motor driven rotation of a member or a linear actuator in a used known manner.

During loading or unloading, one or two operatives may be able to support the weight of the stretcher from the rear of the stretcher with one operative operating the switch to raise and lower the upper and lower frame as required. One or two operatives can support the weight at the rear of the stretcher and push the stretcher in to load, or pull to the stretcher out to unload.

Actuation of the hydraulic lever or the battery powered actuation to cause the raising and lowering of parts of the trolley may also be used in any of the embodiments and the lever could be at any convenient location. In addition or

alternatively, the battery could be used to power other components on the stretcher such as lights, for instance.

As the stretcher is pulled into the ambulance, tubes 206 that support the forward wheels 34 engage forwardly and inwardly inclined channels 208 shown in Figure 14 until they rest against the rearwardly facing ends 210 of those channels. Means (not shown) are provided for maintaining the stretcher in that position. The channels 208 are provided on an outer frame or antlers 212 that is secured to the floor 214 of an ambulance such that the channels 208 are at an appropriate spacing to receive the tubes 206.

Figure 16 is a perspective view of part of the stretcher loading wheel axle 218 and a floor mounted charging block 216 located beneath the antler 212.

The battery 200 that powers the up and down movement of the frames is charged from the ambulance as described below.

As shown in Figure 16 the loading wheel axle 218 is provided with a plate 210 that extends upwardly from a mid point of the axle. The plate includes a pair of spaced contacts 220,222 that are arranged to be brought into engagement with corresponding charging points 224,226 on the ambulance mounted block when the stretcher is, or is nearly, fully located into the ambulance. A micro switch 228 is activated when the connection is made in order that charging of the battery 200 may commence, either continuously, or when the ambulance battery is above a certain charge level or when the power being supplied to the battery of the ambulance is sufficiently high or any combination thereof.

The antlers 212 ensures accurate alignment of the contacts with the charging points and accurate longitudinal relative location. The charging points are spring biased by means

(not shown) such that, as contact begins to be made, the charging points 224,226 retreat slightly into the block to ensure that contact is maintained, even though the stretcher may move slightly whilst fixed to the ambulance. Alternatively or additionally, the charging points may be tapered slightly to allow the contacts to take up any remaining slight misalignment upon initial engagement. Alternatively or additionally, the points may diverge outwardly against a resilient force during engagement of the contacts and points.

The charging points 224,226 may comprise a positive and a negative charge each. Alternatively one point may be negative and the other positive.

The connectors on the contact plate 210 are connected to the battery 200 on the stretcher by, for instance, wires which may extend through the tubes of the loading wheel axle and through other tubes on the frame.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same,

equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any method or process so disclosed.

**CLAIMS**

1. Patient transport apparatus provided with at least one electrical connector arranged, in use, to be automatically connected to an electrical connection in a vehicle, the connection in the vehicle being arranged to be capable of transferring power to the connector of the patient transportation apparatus whereby a battery on the patient transportation apparatus may be charged.

2. Apparatus as claimed in Claim 1 in which the transportation apparatus is arranged to be releasably retained in a vehicle.

3. Apparatus as claimed in Claim 1 or 2 in which the connector on the patient transportation apparatus is connected to the connection of the vehicle by virtue of forwards movement of the patient transportation apparatus into the vehicle.

4. Apparatus as claimed in any preceding claim in which the connector of the patient transportation apparatus faces forwardly with respect to the movement of the patient transportation apparatus into a vehicle.

5. Apparatus as claimed in any preceding claim in which at least one of the connection or the connector is biased such that, in use, when the connection is made, the connector and the connection are urged into contact with each other.

6. Apparatus as claimed in any preceding claim in which at least one of the connection or the connector diverges towards the other.

7. Apparatus as claimed in any preceding claim in which at least one of the connection or the connector is arranged to flex during connection.

8. Apparatus as claimed in Claim 7 in which the connection or connector which flexes does so against a resilient force.

9. Apparatus as claimed in any preceding claim in which, in use, when the connector and the connection are connected, the vehicle includes a sensor determining that the connection has been made.

10. Apparatus as claimed in any preceding claim in which the connector is provided on one of the lower or upper frame of a patient transportation apparatus, the upper frame and the lower frame being movable relative to each other from a first position, in which the frames are spaced from each other and a second position in which the frames are closer together.

11. Apparatus as claimed in any preceding claim in which the connector is provided on a downwardly extending leg of a patient transportation apparatus from which a wheel of the patient transportation apparatus depends.

12. Apparatus as claimed in any preceding claim in which the connector is provided on a cross member of a stretcher.

13. Apparatus as claimed in any preceding claim including two connectors arranged, in use, to be connected to two connections in an ambulance.

14. Patient transportation apparatus substantially as herein described with reference to, and as shown in any of the accompanying drawings.

15. An ambulance incorporating patient transportation apparatus located in the vehicle with the patient transportation apparatus being as claimed in any of Claims 1 to 14, the or each connector of the patient transportation apparatus being connected to the or each connection of the vehicle.

16. A method of electrically connecting a patient transportation apparatus to a vehicle to supply power to a battery on the patient transportation apparatus comprising automatically causing the electrical connection to be made.

17. A method as claimed in Claim 16 comprising moving the patient transportation apparatus relative to the vehicle with that relative movement automatically causing the connection to be made.

18. A method as claimed in Claim 16 or 17 comprising moving the patient transportation apparatus into the vehicle to cause the connection to be made.

19. A method as claimed in any of Claims 16 to 18 comprising moving the patient transportation apparatus into the vehicle whereby the apparatus is automatically releasably retained in the vehicle.

20. A method as claimed in any of Claims 16 to 19 comprising guiding the movement during loading to ensure electrical connection is made.

21. A method as claimed in any of Claims 16 to 20 comprising automatically causing electrical disconnection of the patient transportation apparatus from the vehicle when the stretcher commences movement out of the vehicle.

22. A method as claimed in any of Claims 16 to 21 comprising automatically causing electrical connection to be made to a stretcher.

23. A method as claimed in any of Claims 16 to 22 comprising moving the patient transportation apparatus on wheels in the vehicle.

24. A method of electrically connecting a patient transportation apparatus to a vehicle substantially as herein described with reference to, and as shown in any of the accompanying drawings.

25. A method of electrically connecting a patient transportation apparatus to a vehicle when the apparatus is as referred to in any of Claims 1 to 15.

INVESTOR IN PEOPLE

**Application No:** GB 0315058.8 **Examiner:** Heather Scott
**Claims searched:** 1 - 25 **Date of search:** 7 October 2003

# Patents Act 1977 : Search Report under Section 17

## Documents considered to be relevant:

| Category | Relevant to claims | Identity of document and passage or figure of particular relevance | |
|---|---|---|---|
| Y | 1, 2, 15, 16, 21, 22 & 23 | GB 2351439 A | (FERNO) see page 5 lines 22 - 25 & page 14 lines 21 - 24 |
| Y | 1, 2, 16, 22 & 23 | US 4352991 A | (KAUFMAN) see column 4 line 34 - column 5 line 61 |
| Y | 1, 2, 15, 16, 21, 22 & 23 | US 5662627 A | (SAY) see column 5 lines 17 - 20 |

Categories:

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| X | Document indicating lack of novelty or inventive step | A | Document indicating technological background and/or state of the art. |
| Y | Document indicating lack of inventive step if combined with one or more other documents of same category. | P | Document published on or after the declared priority date but before the filing date of this invention. |
| & | Member of the same patent family | E | Patent document published on or after, but with priority date earlier than, the filing date of this application. |

## Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC[V]:

B7B

Worldwide search of patent documents classified in the following areas of the IPC[7]:

A61G

The following online and other databases have been used in the preparation of this search report:

EPODOC, WPI ,JAPIO

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 December 2005 (29.12.2005)

PCT

(10) International Publication Number
WO 2005/122989 A1

(51) International Patent Classification[7]: A61G 1/06

(21) International Application Number:
PCT/US2005/019547

(22) International Filing Date: 3 June 2005 (03.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/579,395 14 June 2004 (14.06.2004) US

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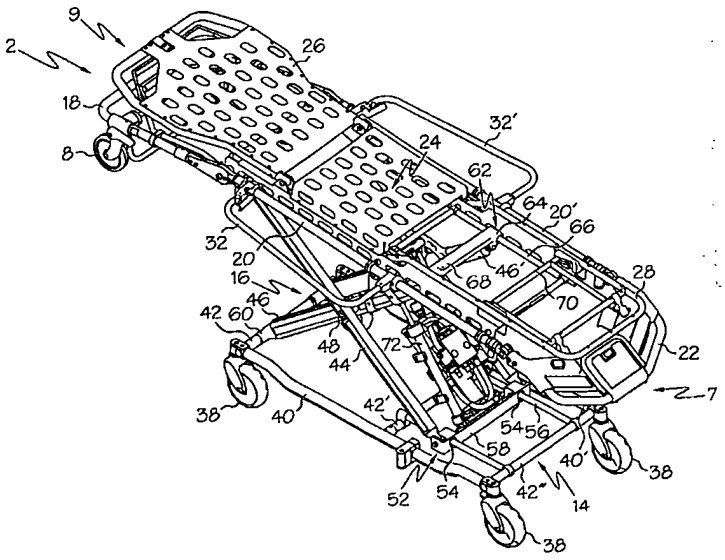
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO,

*[Continued on next page]*

(54) Title: ELECTRO-HYDRAULICALLY POWERED LIFT AMBULANCE COT




(57) Abstract: A collapsible hydraulically operated ambulance cot (2) having a support frame, a wheeled base, a support mechanism (16) disposed therebetween, and a lift system (10) for hydraulically moving the upper (12) frame relative to the lower frame (14) is disclosed. The lift system (10) permits a single attendant to raise the cot (2) from a lowered position to a raised position, and an infinite number of positions therebetween, and to raise the wheeled base relative to the support frame to situate the cot onto an elevated surface such as the transport deck of an ambulance. A manual override is also provided to conserve battery (30) power and as a back-up in no-power situations. It is to be appreciated that the above described manual override mode may be used when raising or lowering the cot (2) without power assist, dropping the undercarriage (11) when unloading from a vehicle, and lifting the undercarriage (11) when loading into a vehicle.

WO 2005/122989 A1

EXHIBIT 1004 PAGE0400

WO 2005/122989 A1

SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# ELECTRO-HYDRAULICALLY POWERED LIFT AMBULANCE COT

This invention relates to ambulance cots and more particularly to an ambulance cot having an electro-hydraulically, operated collapsible frame structure to facilitate loading of the ambulance cot from the ground and into an ambulance by a single operator.

In order to situate a conventional non-powered ambulance cot into the back of an ambulance, two or more attendants often must lift the cot from a relatively low height of approximately 15 cm (about 6 inches) from the ground to a height of almost 1 meter (about 39 inches). Unfortunately, lifting or raising a loaded ambulance cot from this low height increases the risk to these attendants obtaining a back injury or exacerbating an existing one. This problem is exacerbated when handling and transporting a bariatric patient.

It is against the above background, that the present invention provides a hydraulic lift system to an ambulance cot which will be used to assume all or most of the effort required to lift and/or lower the cot and patient carried thereon. The present invention by providing a power lift ambulance cot for emergency medical services and ambulance-related services addresses the problems associated with the physical strain of raising and lowering a loaded ambulance cot. Accordingly, the present invention has the potential to reduce work related injuries and to reduce the amount of lost work time, as well as therapeutic costs.

Although the present invention is not limited to following specific advantages, it is noted that the present invention allows an attendant to raise or lower a patient with only the touch of a button to activate the hydraulic lift system. When using the hydraulic lift

system of the present invention, the cot will lift a patient up to about 363 kilograms (about 700 pounds), thereby addressing scenarios where attendants may be put into a situation where they can injure their back while handling a bariatric patient.

The present invention uses an x-frame design with two hydraulic lift cylinders for raising and lowering the patient, and for providing a smooth and balanced lift operation to the cot. Since the weight of the patient is taken off the attendants and put onto the hydraulic lift system, both attendants now have the ability to assist in holding the weight at the trailing (operator) end of the cot as it's being loaded into a vehicle. Being able to situate the two attendants at the trailing end of the cot allows for an easier loading of the cot into the vehicle, especially one's with floors higher than about 0.7 meters (about 30 inches). It is also to be appreciated that the present invention has an infinite height adjustment range to meet all of the attendant's needed loading positions in order to transfer a patient to and from the cot.

In one embodiment, an electro-hydraulically powered lift ambulance cot comprising a wheeled base having a first slide member slidably supported by a longitudinally extending lower guide is disclosed. A support frame has a second slide member slidably supported by a longitudinally extending upper guide, and is disposed above the wheeled base. A support mechanism, which supports the support frame relative to the wheeled base, is pivotably connected to the support frame, the wheeled base, the first slide member, and the second slide member. A hydraulic lift system is pivotably mounted at a first end to the first slide member, and at a second end to the support mechanism. A motor is mounted to the cot to pump hydraulic fluid under pressure to the lift system in order to

assist relative movement between the support frame and the wheeled base. Pilot operated check valves "lock" hydraulic cylinders of the lift system in place when the pump is de-energized to maintain the cot in its desired position. A manual override is also provided to conserve battery power and as a back-up in no-power situations. It is to be appreciated that the above described manual override mode may be used when raising or lowering the cot without power assist, dropping the undercarriage when unloading from a vehicle, and lifting the undercarriage when loading into a vehicle.

These and other features and advantages of the invention will be more fully understood from the following description of a preferred embodiment of the invention taken together with the accompanying drawings. It is noted that the scope of the claims is defined by the recitations therein and not by the specific discussion of features and advantages set forth in the present description.

The following detailed description of the embodiments of the present invention can be best understood when read in conjunction with the following drawings, where like structure is indicated with like reference numerals and in which:

FIG. 1 is an illustrated side view of a cot according to the invention situated in a fully elevated position;

FIG. 2 is an illustrated side view of a cot according to the invention in a lowered position;

FIG. 3 is an illustrated elevated perspective view of a first side of a cot according to the invention, with parts removed for ease of illustration;

FIG. 4 is an illustrated trailing (operator) end view of a cot according to the invention with parts removed for ease of illustration;

FIG. 5 is an illustrated elevated perspective view of a cot according to the invention;

FIG. 6 shows a connection diagram of the hydraulic system according to an embodiment of the present invention;

FIG. 7 is an illustrated close-up section view of a trailing (operator) end of a cot according to the present invention; and

FIG. 8 is an illustrated close-up section view of a portion of a cot according to the invention showing a charging connection.

Skilled artisans appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help to improve understanding of embodiment(s) of the present invention. Additionally, parts and portion of some elements may be removed to help improve understanding of the embodiments of the present invention.

With reference to FIGS. 1-5, a retractable ambulance cot according to one embodiment of this invention is shown generally as **2**. Upon the cot **2** a patient **4** may be supported, and conveniently loaded onto an elevated surface **6**, such as for example, the transport bay of an ambulance. It is to be appreciated that the cot **2** functions at ambulance load heights up to about 0.9 meters (about 34 inches), thereby reducing the physical strain of loading an ambulance cot into an ambulance. Additionally, it is to be appreciated that the cot **2** unloaded weighs less than about 61 kilograms (about 135

pounds). The overall dimensions of the cot **2** is about 2.1 meters (about 83 inches) long by about 0.6 meters (about 24 inches) wide by about 0.33 meters (about 13 inches) high in the fully lowered position, a position illustrated by FIG. 2.

Referring to FIG. 1, the cot **2** is illustrated in a fully elevated position. It is to be appreciated that a single attendant can hold and manipulate the trailing end **7** of the cot **2** in the elevated position in order to rest loading wheels **8** provided at the leading end **9** of the cot onto the elevated surface **6**. Operation of an associated hydraulic lift system, shown generally as **10**, as described herein in a later section, causes the undercarriage to be hydraulically raised to the level of the elevated surface **6** allowing the attendant to transfer the cot **2** thereon in a lowered position, such as depicted by FIG. 2. It is to be appreciated that the cot **2** when situated in a fully lowered position, loading wheels **8** and swivel wheels **38** support the cot **2** upon the elevated surface **6**.

The hydraulic lift system **10** also hydraulically raises the cot **2** from the lowered position to the raised position, and an infinite number of positions therebetween. Pressure in the hydraulic lift system **10** may also be manually released to cause the cot **2** to be lowered from the raised position to the lowered position, and an infinite number of positions therebetween, to conserve battery power and as a back-up in no-power situations. It is also to be appreciated that the above described manual mode may also be used when raising the cot without power assist, dropping the undercarriage when unloading from a vehicle, and lifting the undercarriage when loading into a vehicle.

The undercarriage, generally indicated by symbol **11**, of the cot **2** comprises an upper frame **12**, a lower frame **14**, and a support mechanism shown generally as **16**

disposed therebetween for supporting the upper frame **12** relative to the lower frame **14**. The upper frame **12** is generally rectangular, and in the illustrated embodiment shown by FIG. 3, comprises at the leading end **9**, a leading end frame member **18** coupled to a pair of opposed, longitudinally extending side frame members **20, 20'**. At the trailing end **7**, the side frame members **20, 20'** are coupled rotatably to a trailing end frame member **22**, having a bent U-shape. The frame members **18, 20, 20',** and **22** are a tubular material, such as metal, laminate, plastics, or combinations thereof.

In the illustrated embodiment, the leading end frame member **18** is coupled rotatably to the opposed side frame members **20, 20'** and is a drop frame, such as the type disclosed by U.S. Patent No. 6,701,545, a patent commonly assigned to Ferno Washington, Inc., and the disclosure of which is herein fully incorporated by reference. The loading wheels **8** are provided to the leading end frame member **18**.

In one embodiment, the upper frame **12** includes a patient bed shown generally as **24** in FIG. 3, upon which the patient **4** rests, as is illustrated in FIG. 1. The patient bed **24** includes raisable back and leg rests **26** and **28**, respectively. Situated below the back rest **26** is a battery **30**, which is best shown by FIG. 5. Battery **30** provides the necessary power to operate the hydraulic lift system **10** according to the invention, and is rechargeable without being removed from the cot via an electric connection to an external source. It is to be appreciated that the term "battery" includes single cell batteries and multiple cell batteries.

In one embodiment, an electrical connection is made through the use of an extension cord (not shown). In another embodiment, such as illustrated by FIG. 8, an electrical

connection is made through a cot fastening device **200** situated in an emergency vehicle, represented by portion **204**. The cot **2** in the illustrated embodiment provides an electrical contact pad **204** adjacent a fastening member **206** that is mounted to the cot. As shown by FIG. 5, in one embodiment, the electrical contact pads **204** and fastening member **206** are provided to the side frame members **20** and **40**, respectively. In another embodiment the electrical contact pads **204** may be situated with the fastening member **206** on the lower frame **14** of the cot **2**, or vice versa. In any of the embodiments, when the cot **2** is situated into the emergency vehicle and the fastening device **200** releasably securing the fastening member **206**, an electric connection with an external source, such the vehicles electrical system, is made. An electrical connection is made through the use of electrical prongs **208** provided adjacent the fastening device **200**, and which contact the electrical contact pads **204**. It is to be appreciated that movable protective covers may be provided to one or both of the contact pads and electric prongs.

The battery **30**, which in one embodiment provides 24 VDC, 25 amps, provides enough energy to lift and lower the upper frame **12** relative to the lower frame **14** while supporting a patient weighing about 227 kilograms (about 500 pounds) about 20 times before needing a recharge. The number of cycles can be increased by utilizing the manual override, and gravity, to conserve power when lowering the cot from an elevated position (FIG. 1) to a lowered position (FIG. 2). In other embodiments, other voltages and amperes may be used.

As shown by FIG. 3, the upper frame **12** further includes a pair of sidearm supports **32, 32'** which are each rotatably mounted to respective side frame members **20, 20'**. It is

to be appreciated that the pair of sidearm supports **32, 32'** rotate about an axis, which is the central axis of each side frame members **20, 20'**. Each sidearm support **32, 32'** can rotate about 180 degrees from a vertically up position to a nearly vertically down position, or to an outwardly extended position, as is illustrated in FIG. 3.

In another embodiment, the upper frame **12** is a support platform for releasably receiving a multipurpose roll-in cot shown generally as **34** in FIG. 9. The upper frame **12** in this embodiment would be provided without the back and leg rests **26** and **28** (FIG. 3) and would be provided with mounting engagements **36** to support multipurpose roll-in cots such as, for example, the types disclosed by U.S. Patent No. 4,037,871, and PCT Application No. US01/45144 (WO0239944), references commonly assigned to Ferno Washington, Inc., the disclosures of which are herein fully incorporated by reference.

As best illustrated by FIG. 3, the lower frame **14** is generally rectangular, and has a set of swivel wheels **38** at each corner thereof. The wheels **38** may be conventional caster wheels with foot-operated locking mechanisms. The lower frame **14** comprises a pair of longitudinally extending side frame members **40, 40'** separated by three transverse frame members **42, 42'**, and **42''** provided at the loading end, an approximate midsection of the lower frame **14**, and the trailing end, respectively.

The support mechanism **16** is an x-frame that includes a first pair of parallel legs **44, 44'** and a second pair of parallel legs **46, 46'**. Respective ones of the pairs of legs **44, 46** and **44', 46'** are pivotably connected at an intermediate location by a pivot brace or connection **48**. The upper frame **12** is connected to each of the first pair of legs **44, 44'** by a pivot **50** (the pivots on both sides of the frame **12** are the same), which is best shown in

FIG. 1. The lower ends of the first pair of legs **44, 44'** are pivotably connected to the lower frame **14** by a first slide member **52**.

With reference to FIG. 3, the first slide member shown generally as symbol **52** comprises linear bearings **54** slidably supported by longitudinally extending bearing supports or guide **56** and mounted to a bracket **58**. If desired, linear bearings **54** and bracket **58** may be a unitary component. As illustrated, the guide **56** is mounted between the transverse frame members **42'** and **42''** of the lower frame **14**. The lower ends of the first pair of legs **44, 44'** are also pivotably mounted to bracket **58**. The lower ends of the second pair of legs **46, 46'** are pivotably connected to the leading transverse frame member **42** of the lower support frame **14** also by pivots **60**. The upper ends of the second pair of legs **46, 46'** are pivotably connected to upper frame **12** by a second slide member shown generally as **62**. The second slide member **62** comprises linear bearings **64** slidably supported by longitudinally extending bearing supports or guide **66**, and a bracket **68** upon which the upper ends of the second pair of legs **46, 46'** are pivotably mounted. The guide **66** is mounted to the upper frame **12** via a laterally extending brace **70**.

The hydraulic lift system **10** is also pivotably mounted between the second pair of legs **46, 46'** and the first slide member **52**. As best illustrated by FIG. 4, the lift system **10** utilizes a pair of hydraulic cylinders **72, 72'**. The lower ends of the cylinders **72** are pivoted off bracket **58** and move along with the first slide member **52**. The upper ends of the cylinders **72, 72'** are pivoted off a bar attachment **74** mounted between the second pair of legs **46, 46'** above the pivot braces or connections **48**. The bar attachment **74** mounted above the connections **48** provides a mechanical advantage at the beginning of the lift

sequence, wherein slightly less than about 1.8 kilograms ( about 4 pounds) of mechanical lift is needed per about 0.45 kilograms (about 1 pound) of patient.

Accordingly, in one exemplary embodiment, based upon utilizing a pair of 2.54 cm (1-inch) diameter hydraulic cylinders with about 25.4 cm (about 10 inches) of stroke and a working pressure of about 13.8 MPa (about 2000 psi), the cot **2** is able to lift a patient weighing about 317.5 kilograms (about 700 pounds). As also best illustrated by FIG. 4, an electro-hydraulic system **76** of the hydraulic lift system **10** is provided to the cot **2** between the pair of hydraulic cylinders **72, 72'**. As illustrated in FIG. 5, a protective cover **210** is provided enclosing the electro-hydraulic system **76**. The electro-hydraulic system **76** is discussed in greater detail hereafter in reference to FIG. 6.

As can be seen in the FIG. 6, the electro-hydraulic system **76**, which serves to hydraulically actuate the vertically adjustable ambulance cot **2**, comprises a power unit **78** having an electric motor **80**, powered by battery **30** (FIG. 1), driving a pump **82** for supplying the hydraulic fluid from a reservoir **84**, and a hydraulic control circuit **86**. The power unit **78** is operable in two directions to supply hydraulic fluid from the reservoir **84** (through a respective filter **88** or **88'** and respective pair of check valves **90, 98** or **90', 98'**) to either a first branch **92** or a second branch **94** of the control circuit **86**. In the illustrated embodiment, check valves **98, 98'** are pilot controlled check valves. Also as illustrated, the pump **82** is in fluid connection between the pairs of check valves **90, 90'** and **98, 98'** along with a back pressure circuit **95** provided upstream thereof. The backpressure circuit **95** ensures a more smooth and even movement of the hydraulic cylinders without a sharp jerking motion, and includes a spring-controlled unloading valve **96** and a low pressure

relief valve **104**. The low pressure relief valve **104** is set to relieve back pressures in excess of about 1,034 kiloPascals (about 150 psi).

In the first branch **92** of the control circuit **86**, which extends from the power unit **78** to the extension side of the cylinders **72, 72'**, a high pressure relief valve **100** is positioned, which is set to relieve line pressures in excess of 13.8 MPa (2000 psi). Downstream from the high pressure relief valve **100** is positioned an adjustable compensating feed valve **102**. The feed valve **102** provides a wide range of advance and retract feeds, thereby ensuring that the hydraulic fluid is provided to the cylinders **72, 72'** in at a controlled and safe rate. However, a bypass check value **103** is provided around feed vale **102** to ensure that suitable fluid flow is provided to the extension side of the hydraulic cylinders **72, 72'**, thereby ensuring a smooth extension of cylinders **72, 72'** when lifting under power a patient situated on the cot **10**.

Additionally, the bypass check valve **103** ensures a vacuum does not form on the extension side of the hydraulic cylinders **72, 72'** when manually raising the cot **2** which is explained more fully in a later section. The hydraulic cylinders **72, 72'** are under power when the motor **80** is operated to supply fluid under pressure to the first branch **92** in order to extend the cylinders **72, 72'**, thereby raising the upper frame **12** of the cot **2** relative to the lower frame **14**. In one embodiment, the rate of the hydraulic fluid supply to the first branch **92** from the power unit **78** is about 3 liters per minute (about 0.80 GPM).

In the second branch **94**, which is parallel to said first branch **92** and which extends between the retraction side of the cylinders **72, 72'** and the power unit **78**, a high pressure relief valve **105** is positioned, which is set to relieve line pressures in excess of 13.8 MPa

(2000 psi). Downstream from the high pressure relief valve **105** is positioned pilot controlled check valve **98'**. The motor **80** is operated to supply fluid under pressure to the second branch **94** in order to retract the cylinders **72, 72'**, thereby lowering the upper frame **12** relative to the lower frame **14**. In one embodiment, the rate of the hydraulic fluid supply to the second branch **94** from the power unit **78** is about 2.3 liters per minute (about 0.6 GPM).

Between the first branch **92** and the second branch **94**, are located a pair of hand operated spring-return valves **106, 106'**, used to manually lower or raise the cot **2**. The outlets of the hand-operated spring-return valves **106, 106'** dump to the reservoir **84**. A check valve **108**, which flows only in the feed direction of the second branch **94**, ensures a vacuum does not form on the bottom side of the hydraulic cylinders **72, 72'** when manually lowering the cot **2** via operating the hand-operated spring-return valves **106, 106'**.

Taking as an initial position of the cot **2** at the lowered position thereof, the pump **82** of the power unit **78** pumps the fluid into the first branch **92**, through the associated pilot control check valve **98**, to the pressure compensated feed valve **102** and through the bypass check value **103**. It is to be appreciated that supplying hydraulic fluid to the first branch **92** also opens the check valve **98'** in the second branch **94** to permit the hydraulic fluid to flow from the bottom of the cylinders **72, 72'** back to the inlet of the pump **82**.

When the pressure required for lifting the cylinders **72, 72'** has been reached, the cylinders **72, 72'** will be accelerated continuously and slowly until it has reached its maximum speed depending on the properties of the fluid flow and pressure drop. In the

course of this process, the pressure in the first branch **92** up to the inlet of the feed valve **102** and through bypass check valve **103** will exceeds the pressure in the cylinders **72, 72'** as the amount of fluid delivered by the pump **82** is larger than the maximum amount of fluid flowing through the feed valve **102** and bypass check value **103**. Accordingly, the excessive amount of fluid in the first branch **92** is then discharged into the reservoir **84** by being dumped via feed valve **102**. It follows that a constant lifting movement is carried out until the power unit **78** is switched off.

A short time after switching off the power unit **78**, such as when reaching the desired level for the upper frame **12** of the cot **2**, the pilot operated check valve **98** in the first branch **92** remains closed as long as the pressure at its inlet does not exceed the pressure in the cylinder or is opened by operating the power unit in the opposite direction. Hence, the cylinders **72, 72'**, are prevented from retracting. Exactly the opposite takes place in the second branch **94** when lowering the upper frame **12** by operating power unit in the reverse direction.

Turning to FIG. 7, an illustrated close-up section view of a trailing (operator) end **7** of the cot **2** according to the present invention is shown. As illustrated, the trailing (operator) end **7** of the cot provides the end frame member **22**, which has a bent U-shape, and like the leading end frame member **18** (FIG. 3), is also a drop frame with a plurality of locking positions. It is to be appreciated that the trailing end frame member **22** can be raised or lowered with two hands, and along with its bent U-shape, thereby provides additional lifting points for better ergonomics and fewer injuries, and reduces overall length of the cot for easier maneuverability in confined spaces.

Provided to the trailing end frame member **22** is an on/off button **212** used to energize the motor **80** in the power unit **78** (FIG. 6) with battery **30** (FIG. 1). A battery charge indicator **214** is also provided, which indicates battery state of charge. Relatively large thumb control switches **216, 216'** used to control the up and down operation of the cot **2**, are also provided to the trailing end frame member **22**. It is to be appreciated that the U-shape of the trailing end frame member **22** and the relatively large thumb control switches **216, 216'**, provide for a wide range of hand sizes and gripping points along the frame member **22** , thereby making it easier for two operators to load the cot while both sets of hands are holding the cot from the trailing (operator) end **7**. An actuator **218** for the manual operation mode of the cot **2** is also provided at the trailing (operator) end **7**.

While the invention has been described by reference to certain preferred embodiments, it should be understood that numerous changes could be made within the spirit and scope of the inventive concepts described. For example, all relief valves may be variably adjusted, and that although in one embodiment the above mentioned pressures are suitable, other system pressures may be used without departing from the scope and spirit of the invention. Accordingly, it is intended that the invention not be limited to the disclosed embodiments, but that it have the full scope permitted by the language of the following claims.

## CLAIMS

1. A hydraulically powered lift ambulance cot comprising:

a wheeled base having a first slide member slidably supported by a longitudinally extending lower guide;

a support frame having a second slide member slidably supported by a longitudinally extending upper guide, said support frame is disposed above said wheeled base;

a support mechanism which supports said support frame relative to said wheeled base, said support mechanism is pivotably connected to said support frame, said wheeled base, said first slide member, and said second slide member;

a hydraulic lift system pivotably mounted at a first end to said first slide member, and at a second end to said support mechanism; and

a battery provided to said cot to supply electricity to the hydraulic lift system in order to assist relative movement between said support frame and said wheeled base.

2. The hydraulically powered lift ambulance cot according to claim 1, wherein said support frame forms a bed having an adjustable head end, and said battery releasably mounted below said head end.

3. The hydraulically powered lift ambulance cot according to claim 1 wherein the first slide member comprises linear bearings slidably supported by the lower guide and mounted to a bracket upon which the lower ends of a first pair of legs of said support mechanism pivotably mounted.

4. The hydraulically powered lift ambulance cot according to claim 1, wherein the second slide member comprises linear bearings slidably supported by the upper guide and a bracket upon which first ends of a second pair of legs of the support mechanism pivotably mounted.

5. The hydraulically powered lift ambulance cot according to claim 1 wherein the first slide member comprises linear bearings slidably supported by the lower guide and mounted to a bracket upon which the lower ends of a first pair of legs of said support mechanism pivotably mounted, and wherein the second slide member comprises linear bearings slidably supported by the upper guide and a bracket upon which first ends of a second pair of legs of the support mechanism pivotably mounted.

6. The hydraulically powered lift ambulance cot according to claim 1, wherein said support mechanism is an x-frame that includes a first pair of parallel legs and a second pair of parallel legs, respective ones of the pairs of legs are pivotably connected at an intermediate location by a pivot brace.

7. The hydraulically powered lift ambulance cot according to claim 1, wherein said support mechanism is an x-frame that includes a first pair of parallel legs and a second pair of parallel legs, respective ones of the pairs of parallel legs are pivotably connected at an intermediate location by a pivot brace, and said lift system is pivotably mounted at said second end to said first pair of parallel legs above each said pivot brace.

8. The hydraulically powered lift ambulance cot according to claim 1, wherein said support mechanism includes a first pair of elongated legs having a first end pivotably connected to said first slide member and a second end pivotably connected to said support frame, and a second pair of elongated legs having a first end pivotably connected to said base and a second end pivotably connected to said second slide member, respective ones of said first and second pairs of elongated legs being pivotably connected to one another each by a pivot connection.

9. The hydraulically powered lift ambulance cot according to claim 1, wherein the hydraulic lift system comprises two hydraulic cylinders, wherein lower ends of the cylinders are pivoted off the first slide member and move said first slide member to adjust the vertical position between the support frame and wheeled base.

10. The hydraulically powered lift ambulance cot according to claim 1, wherein the hydraulic lift system comprises two hydraulic cylinders, wherein lower ends of the cylinders are pivoted off a bracket of the first slide member and move said first slide

member to adjust the vertical position between the support frame and wheeled base, and upper ends of the cylinders are pivoted off a bar attachment mounted offset from and above pivot connections between respective ones of pairs of parallel legs of said support mechanism.

11. The hydraulically powered lift ambulance cot according to claim 1, wherein said hydraulic system comprising:

at least one cylinder for vertically adjusting the ambulance cot;

a power unit having a bi-directional pump;

a control circuit having a first branch in fluid connection with both the pump and an extension side of the at least one cylinder, a second branch in fluid connection with both the pump and a retraction side of the at least one cylinder, and a pair of hand-operated spring-return valves in fluid connection between the first and second branches.

12. The hydraulically powered lift ambulance cot according to claim 11, wherein said first branch comprises a pressure compensated feed valve, a bypass check valve around said pressure compensated feed valve, and a pressure relief valve.

13. The hydraulically powered lift ambulance cot according to claim 11, wherein said second branch comprises a pressure relief valve.

14. The hydraulically powered lift ambulance cot according to claim 11, wherein each output side of the pair of hand-operated spring-return valves is in fluid connection with a check valve in fluid connection with the second branch.

15. The hydraulically powered lift ambulance cot according to claim 11, wherein the power unit provides about 3 liters per minute (about 0.8 GPM) to the first branch, and about 2.3 liters per minute (about 0.6 GPM) to the second branch.

16. The hydraulically powered lift ambulance cot according to claim 11, wherein the power unit check valves are pilot operated.

17. The hydraulically powered lift ambulance cot according to claim 11, wherein the pair of pressure relief valve are set to relieve at about 11,032 kiloPascals (about 1600 psi) and about 13,790 kiloPascals (about 2000 psi), respectively.

18. The hydraulically powered lift ambulance cot according to claim 1, further comprising a fastening device provided to a first side frame member of said cot and electrical contact pads provided to a second side frame member of said cot, said electrical contact pads are configured to make an electrical connection between an external source and said battery when said cot is releasably secured in an emergency vehicle by said fastening device.

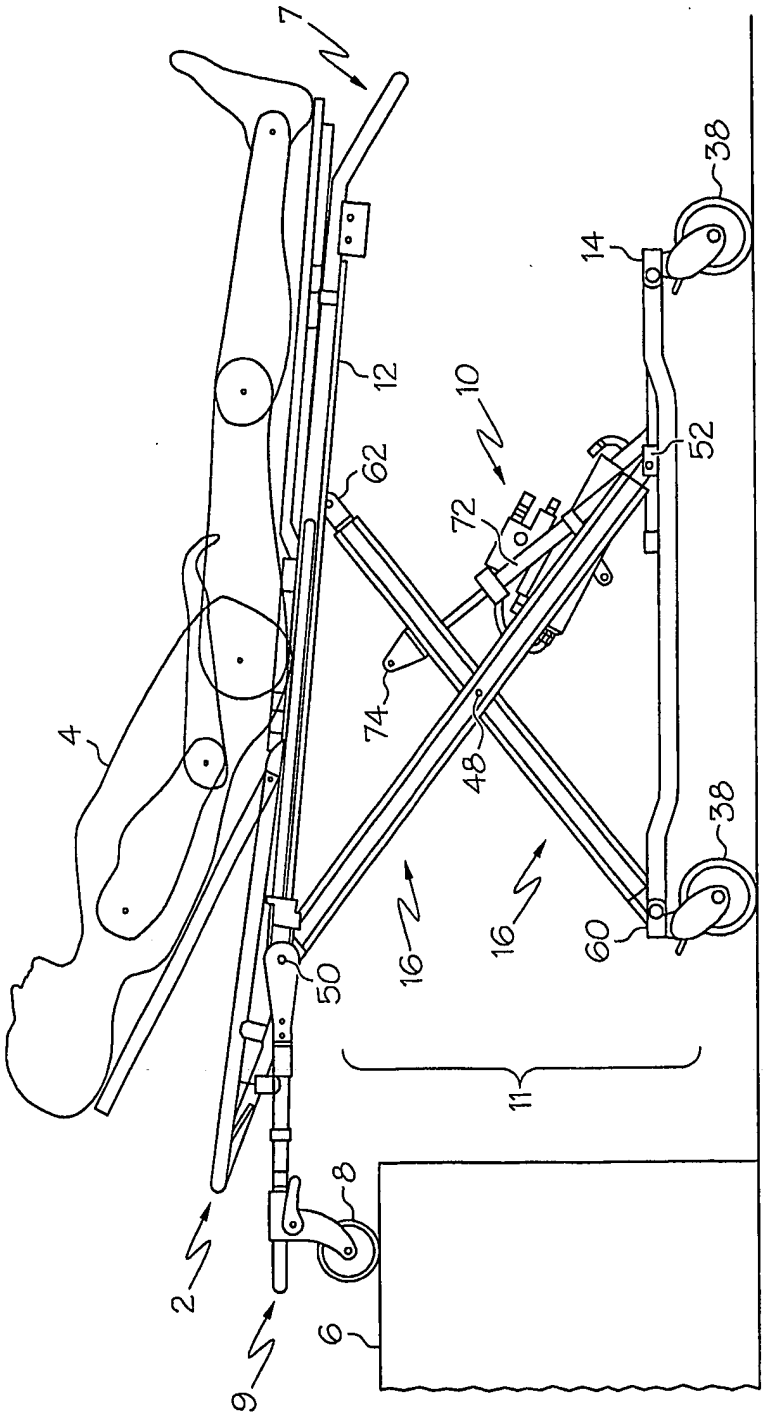



FIG. 1

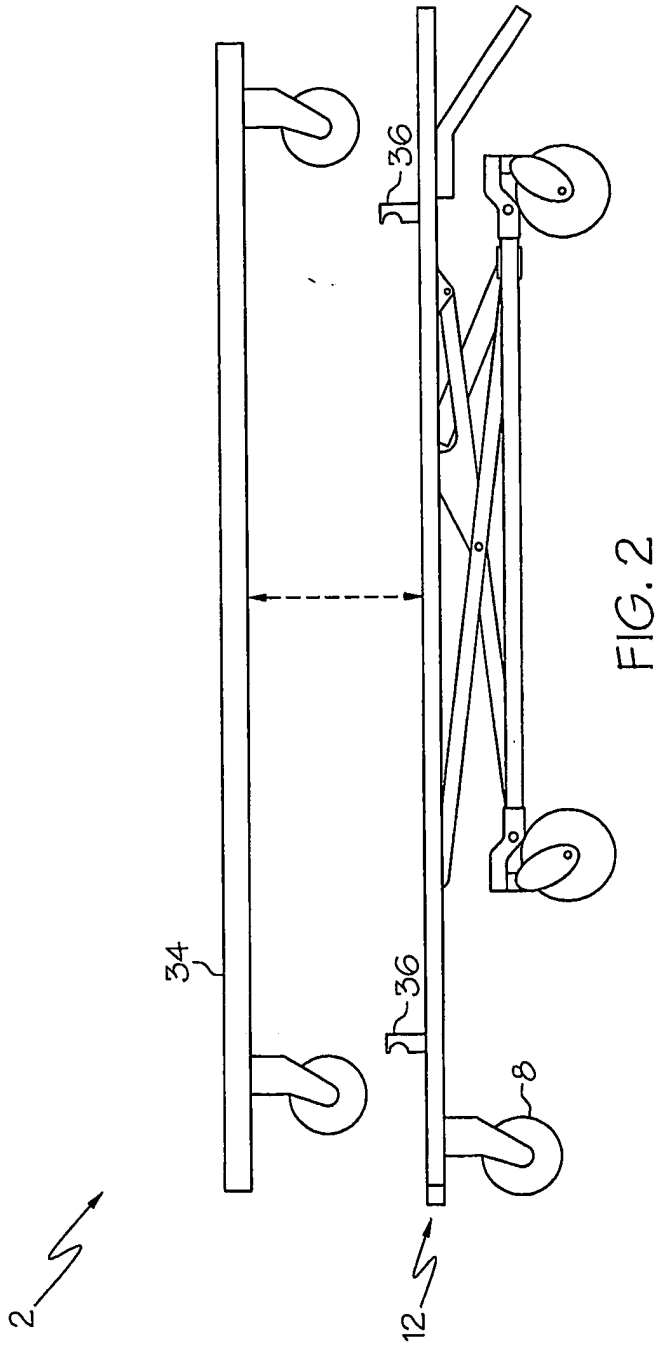



FIG. 2

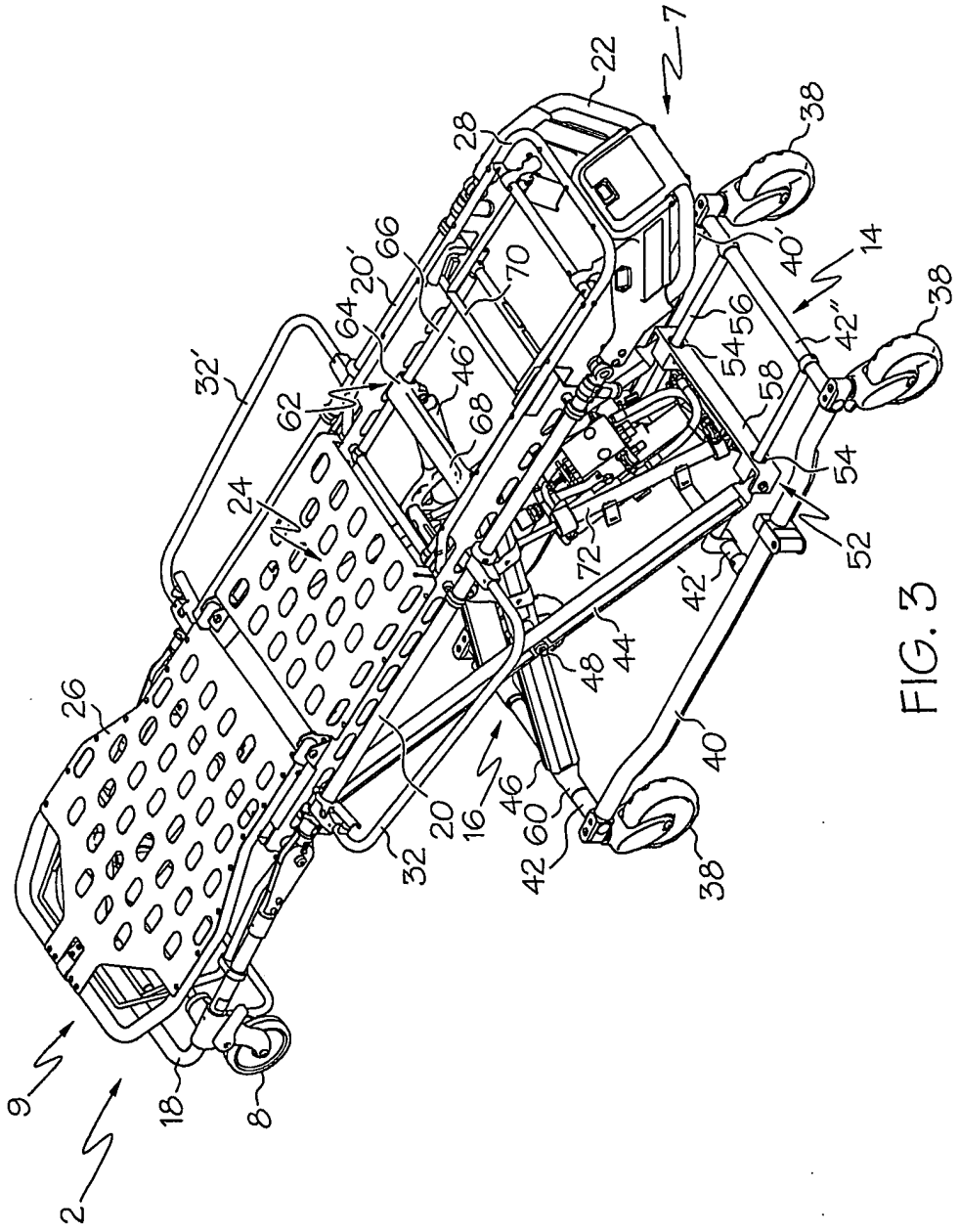

7
22
28
38
40'
14
20'
66
70
64
46'
32'
62
68
24
54
56
42"
58
52
72
42'
48
44
26
40
46
60
42
16
20
32
9
18
8
2

FIG. 3

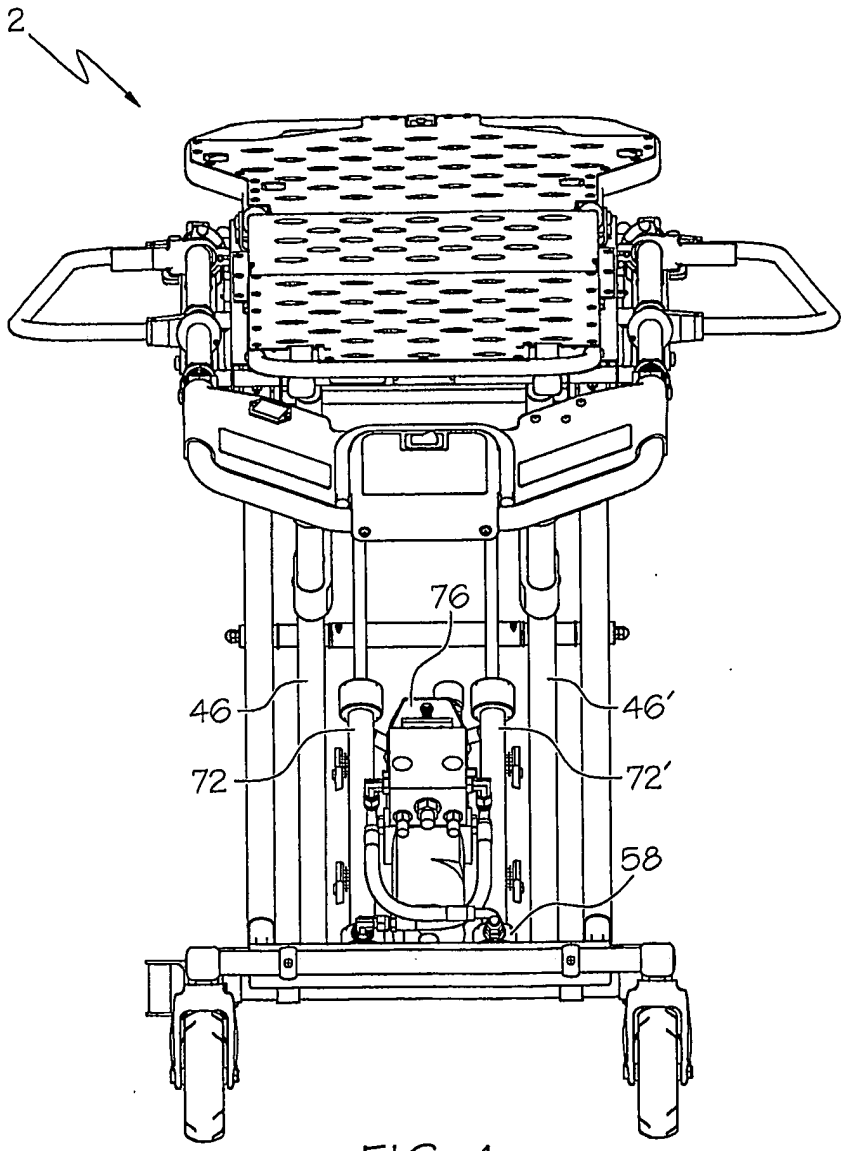



FIG. 4

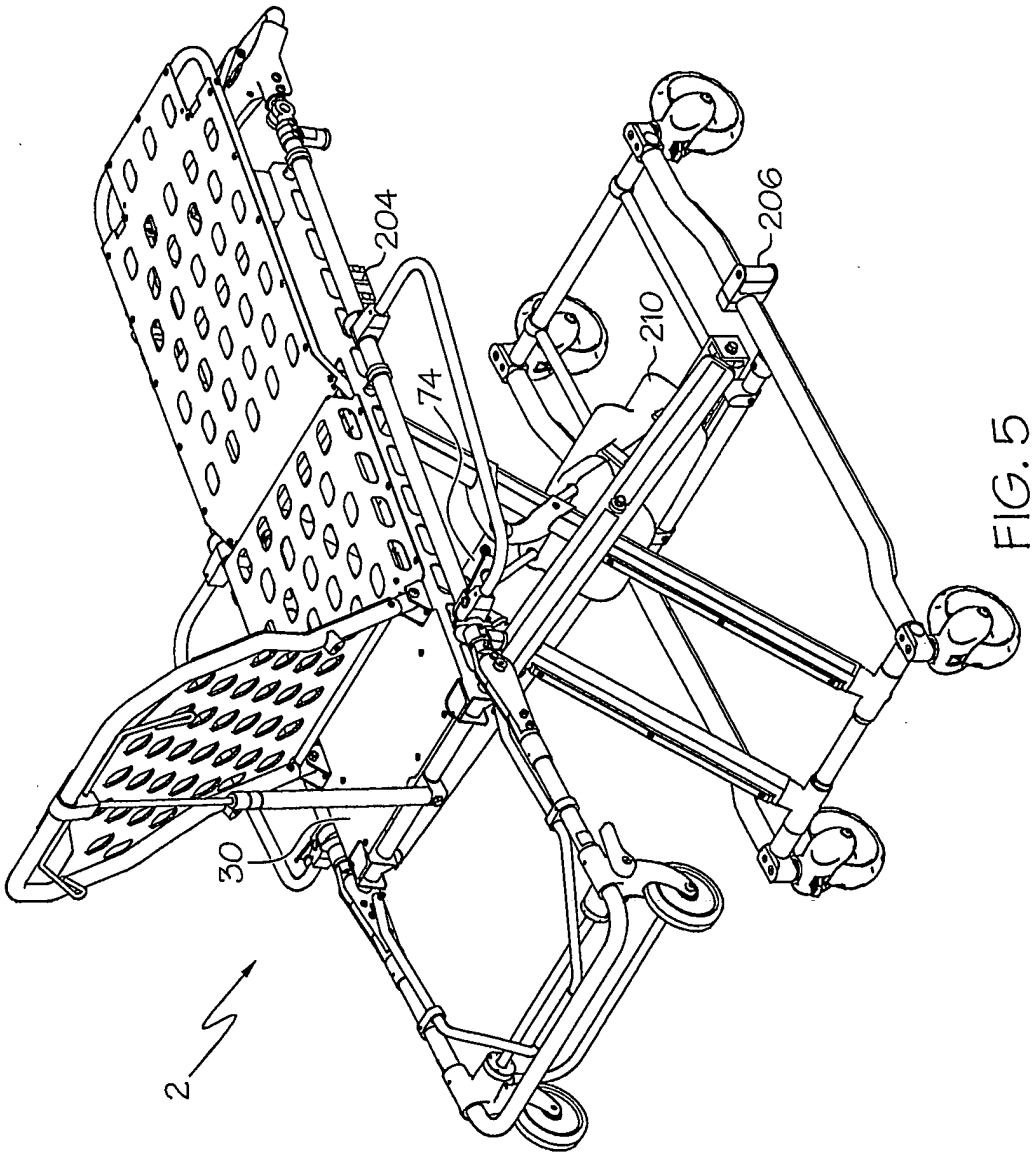



FIG. 5

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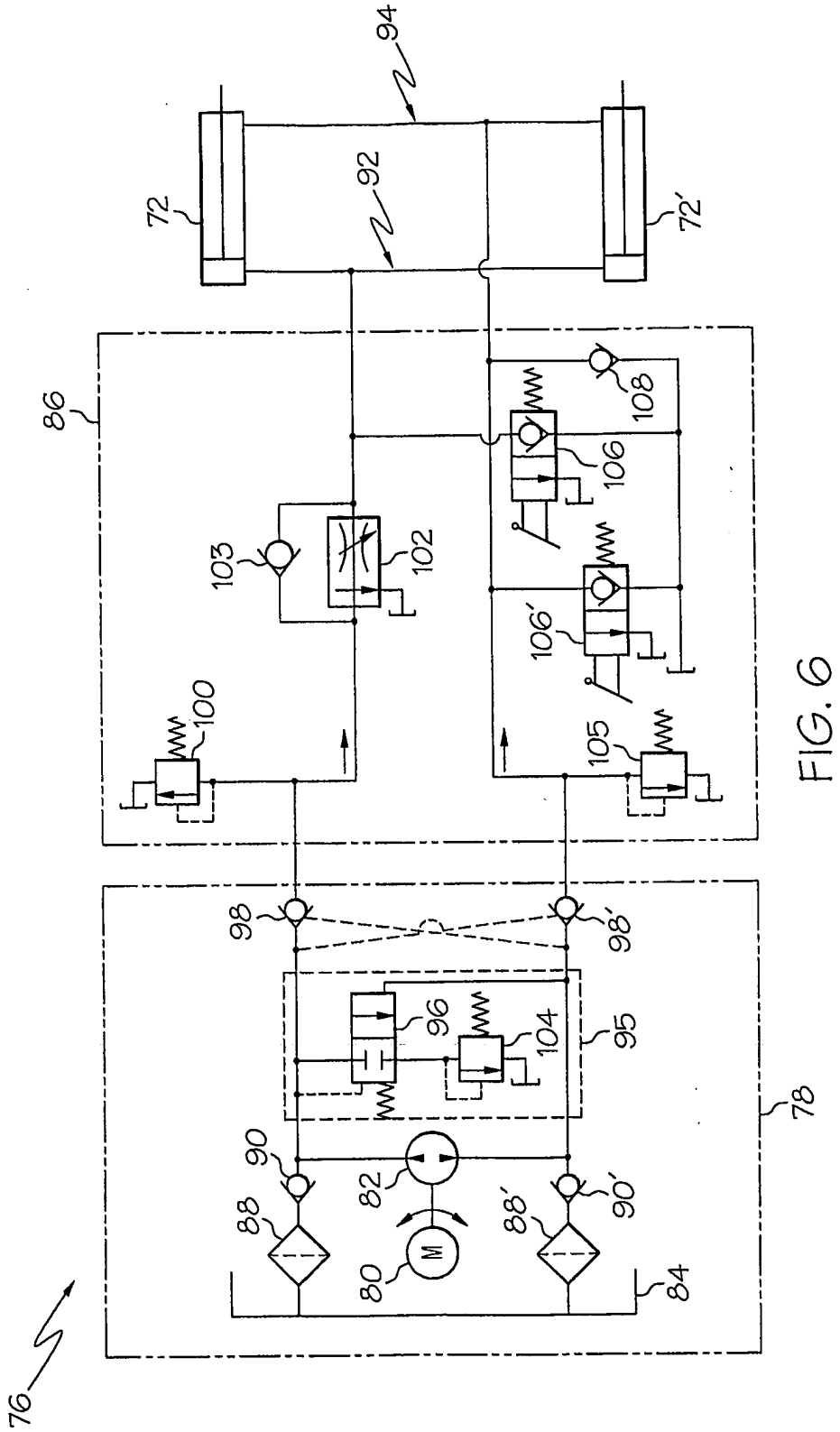

94
92
72
72'
86
108
106
103
102
106'
100
105
98
98'
96
104
95
78
90
82
88
88'
90'
80
M
84
76

FIG. 6

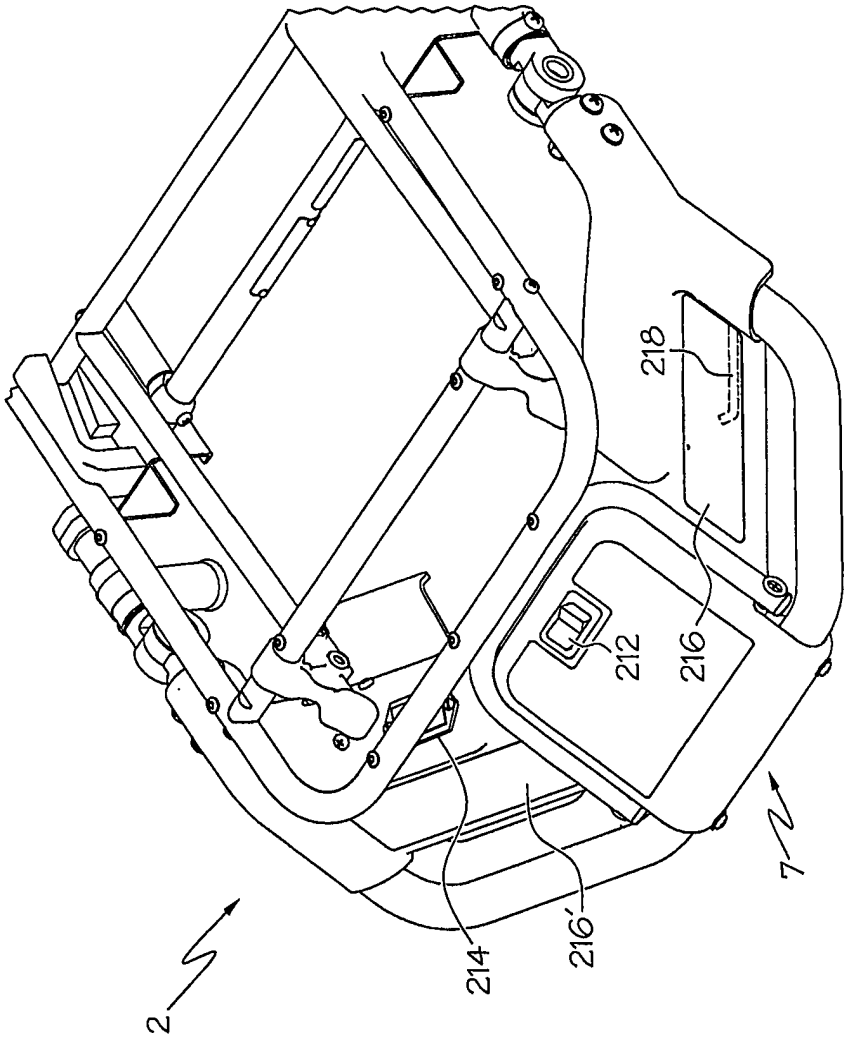



FIG. 7

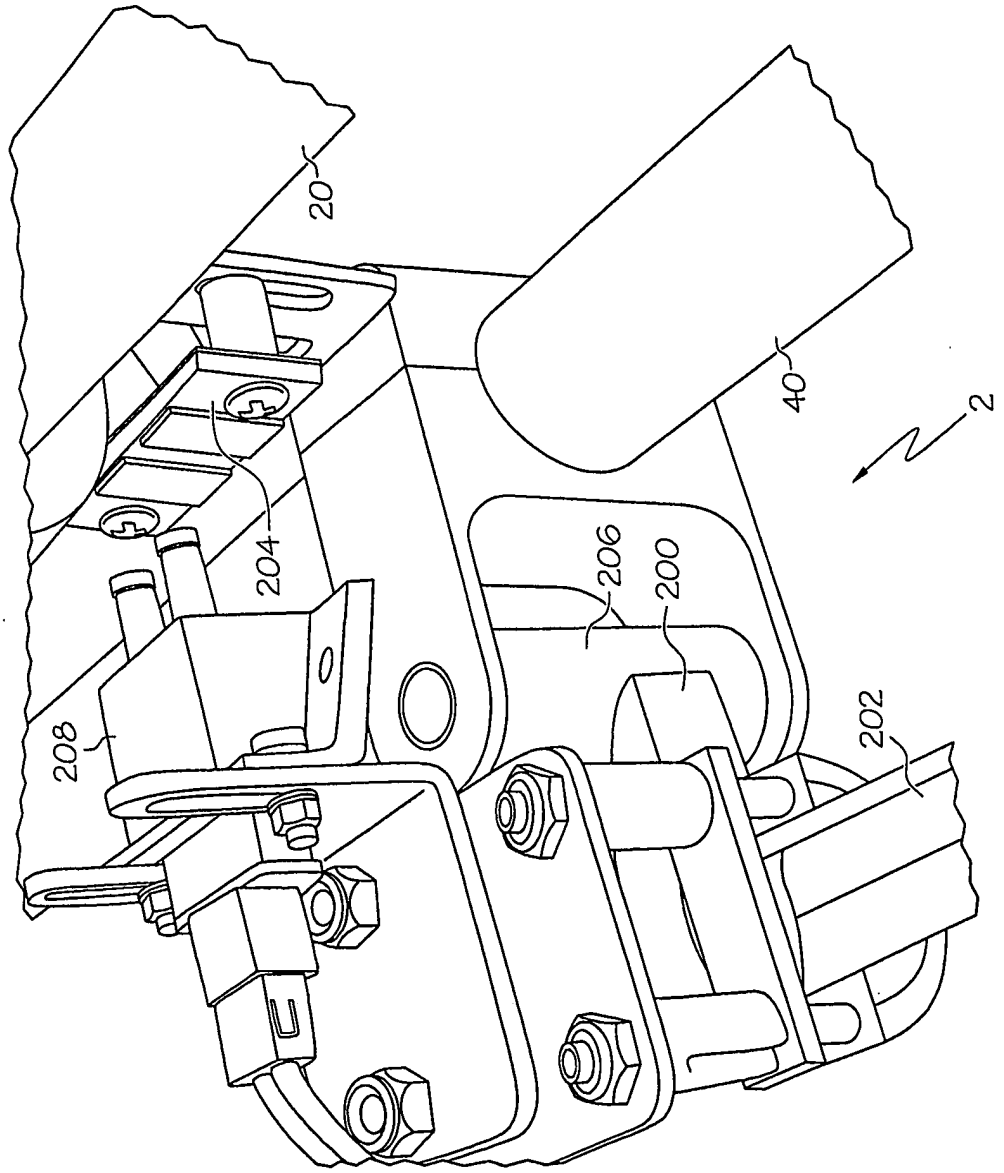



FIG. 8

# INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/019547

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61G1/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| Y | US 2004/080172 A1 (MITCHELL DONALD E ET AL) 29 April 2004 (2004-04-29)<br>figure 2<br>paragraphs '0025! - '0028! | 1-10,18 |
| Y | GB 2 390 062 A (* FERNO)<br>31 December 2003 (2003-12-31)<br>figure 6<br>claim 1 | 1-10,18 |
| A | US 4 078 269 A (WEIPERT ET AL)<br>14 March 1978 (1978-03-14)<br>figure 2 | 1,11-17 |
| A | GB 2 368 317 A (* LEEC LIMITED)<br>1 May 2002 (2002-05-01)<br>figure 2 | 1 |

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 14 September 2005 | 05/10/2005 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL – 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Girard, O |

# INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/019547

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | US 2002/174486 A1 (HEUVEL CHRISTIAN VAN DEN ET AL) 28 November 2002 (2002-11-28) figures 2-4 | 1 |
| A | US 6 024 528 A (TAYLOR ET AL) 15 February 2000 (2000-02-15) figure 4 | 1 |

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International Application No
PCT/US2005/019547

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PATENT APPLICATION SERIAL NO._____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

05/11/2011 EEKUBAY1 00000001 13068358

| | |
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| 01 FC:1014 | 330.00 OP |
| 02 FC:1114 | 540.00 OP |
| 03 FC:1314 | 650.00 OP |
| 04 FC:1204 | 660.00 OP |

PTO-1556
(5/87)

*U.S. Government Printing Office: 2002- 489-267/69033

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
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# PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

| Application or Docket Number | Filing Date | ☐ To be Mailed |
|---|---|---|
| 13/068,358 | 05/09/2011 | |

## APPLICATION AS FILED – PART I

| FOR | (Column 1) NUMBER FILED | (Column 2) NUMBER EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY FEE ($) |
|---|---|---|---|---|---|---|---|
| ☐ BASIC FEE (37 CFR 1.16(a), (b), or (c)) | N/A | N/A | N/A | | | N/A | |
| ☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m)) | N/A | N/A | N/A | | | N/A | |
| ☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q)) | N/A | N/A | N/A | | | N/A | |
| TOTAL CLAIMS (37 CFR 1.16(i)) | minus 20 = | * | X $ = | | OR | X $ = | |
| INDEPENDENT CLAIMS (37 CFR 1.16(h)) | minus 3 = | * | X $ = | | | X $ = | |
| ☐ APPLICATION SIZE FEE (37 CFR 1.16(s)) | If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s). | | | | | | |
| ☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j)) | | | | | | | |
| * If the difference in column 1 is less than zero, enter "0" in column 2. | | | TOTAL | | | TOTAL | |

## APPLICATION AS AMENDED – PART II

| AMENDMENT | 05/09/2011 | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * 15 | Minus | ** 20 | = 0 | X $ = | | OR | X $52= | 0 |
| | Independent (37 CFR 1.16(h)) | * 6 | Minus | ***6 | = 0 | X $ = | | OR | X $220= | 0 |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | 0 |

| AMENDMENT | | (Column 1) CLAIMS REMAINING AFTER AMENDMENT | | (Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR | (Column 3) PRESENT EXTRA | SMALL ENTITY RATE ($) | SMALL ENTITY ADDITIONAL FEE ($) | OR | OTHER THAN SMALL ENTITY RATE ($) | OTHER THAN SMALL ENTITY ADDITIONAL FEE ($) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total (37 CFR 1.16(i)) | * | Minus | ** | = | X $ = | | OR | X $ = | |
| | Independent (37 CFR 1.16(h)) | * | Minus | *** | = | X $ = | | OR | X $ = | |
| | ☐ Application Size Fee (37 CFR 1.16(s)) | | | | | | | | | |
| | ☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j)) | | | | | | | OR | | |
| | | | | | | TOTAL ADD'L FEE | | OR | TOTAL ADD'L FEE | |

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/CATHERINE SMITH/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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